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OR

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OF

## PRACTICAL MEDICINE AND SURGERY

EDITED BY

JOHN FORBES M.D. F.R.S. F.G.S.

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THE
BRITISH AND FOREIGN
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FOR JANUARY, 1845.

# PART FIRST.

## Analytical and Critical Reviews.

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*Illustrations of the Theory and Practice of Ventilation, with Remarks on Warming, Exclusive Lighting, and the Communication of Sound.* By D. B. Reid, M.D.—*London*, 1844. 8vo, pp. 452.

In this climate and state of society, which subject so large a portion of the population to an in-door life, the subject of ventilation has claims the importance of which it would be difficult to overrate, as they press on all classes of the community. This "age of great cities" congregates human beings into huge masses; and whether they are heaped up in manufactories, or in ships of war, or in churches, chapels, halls, or theatres, or in close cabins, rooms, tenements, or streets, they are all subjected to one great cause of disease—each man poisoning the atmosphere both for himself and his neighbour.

Since the discovery of gases, and of the law that all gases tend to diffuse themselves through each other, ventilation has become a branch of chemistry, and promises to be one of those by which this great science may be applied to the highest purposes of physical discoveries—the improvement of the health and consequently of the well-being of the community. It is fortunate that the necessity which our legislators felt for the comfort of their own persons in the House of Commons, led them to seek the assistance of Dr. Boswell Reid, whose strong manly intellect and untiring energy and zeal are well fitted to apply to practical purposes great scientific principles. The work before us is the result of his investigations. We have previously alluded to its publication: we return to it, in order to lay before our readers those parts which are of special interest to us as medical practitioners. For although the practical management of ventilation must be left to architects and builders, yet, in our investigations as to the causes of the diseases we are called upon to remedy, we should be fully aware of the evils which impure air produces, the probable sources of those evils, and the possibility of removing them.

*Pure and impure air.* No one can doubt the truth of Dr. Reid's observation, that there is great indifference as to the quality of the air we breathe. Its influence is not actually realized, owing to its producing no marked or tangible effect on our external senses; otherwise, those who have every luxury at command, and who spare no pains to gratify the demands of the grosser appetite for food and drink, would not be comparatively thoughtless as to that "finer, more ethereal, and purer food, which has access directly, and without any intervening digestive process, to the living blood."

> "It is not generally understood that in innumerable public and private assemblies, churches, theatres, schools, &c., an atmosphere is often breathed for hours continuously which is as foul and offensive, compared with the air that is congenial to the lungs, as the water of the Thames at London Bridge contrasted with a pure mountain spring. It is no exaggerated statement to affirm, that the greatest scourge with which this and so many other climates is affected, viz. consumption, owes its origin more to ignorance of the laws of health connected with the peculiarities of exposure to alterations of air and temperature, and to the severity of local draughts, than to any disadvantages connected with the local state of the atmosphere which cannot be met with proper care and attention; that numerous other diseases, particularly catarrhs, rheumatisms, and pleurisies, often spring from this cause: that a depreciated tone of mental vigour, as well as of bodily health, may, in endless examples, be traced to the same cause; that the most deadly plagues that have ever appeared have been aggravated, if not caused, by want of cleanliness and ventilation, and that the ordinary typhoid fever of this country almost invariably originates under similar circumstances: that hospitals imperfectly ventilated have in some cases proved a curse instead of a blessing to the miserable patients who have been conveyed to them; that public establishments are known to the medical profession, where, at one time, from the same cause, no case of compound fracture ever recovered, few or none survived the amputation of a limb; mortification attacked every wound, however trivial, while the prostration of strength became so great, that men who had at first stood the severest operations without a murmur, subsequently cried like children from the slightest pain; and that cases have actually presented themselves where the apparently lifeless corpse, subdued and oppressed far more by the atmosphere with which it was surrounded, than to the disease to which it was supposed to have fallen a victim, has actually been known to revive after removal to the dead-room, a separate apartment, where the play of a wholesome atmosphere, flowing unrestrictedly upon it, revived the fading flame of life after it was to all appearance gone, and where health and strength were ultimately restored; that the practice in hospitals has been accompanied with the most decided reduction of mortality as the ventilation has been improved: that even in cities, generally, the mortality has regularly diminished as the external ventilation of the streets has been placed on a better and more systematic footing, by increased attention to cleanliness, and by affording free channels for the passage of air." (pp. 9-10.)

The houses of the rich suffer most from the gaseous products of their kitchens, sculleries, drains, and smoky chimnies, drawn into their halls and staircases, and thence into their rooms; and also from excessive illumination at night, which, when the rooms are ill-ventilated, produces headach and languor. Where gas-lights are used the atmosphere produces soporific effects in many in a very short time. This is the case in innumerable shops and counting-houses. The ventilation of the houses of those whose station places them above the wants of the common necessaries of life is very defective, and Dr. Reid imagines that a few elementary lessons on ventilation would in these cases be very valuable. The miserable condition of the houses of the very poor need not be dwelt upon by those who have our opportunities, as medical men, of becoming personally acquainted with these deficiencies. Dr. Reid observes, that where food and clothing are deficient, ventilation need not be expected; for heat is more essential than fresh air; and defective ventilation, by reducing oxygenation, "preserves warmth, stupefies the feelings, and allays the pangs of hunger."

The deficient means of ventilation in our churches, especially in those with galleries, is a fruitful cause of ill health. Dr. Reid has visited numerous churches in hot weather, to observe the effects of bad air on the congregations, and the following graphic sketch is evidently drawn from the life:

> "In those churches in which I have watched the progress of the influence of vitiated air, as the service proceeded, on individuals whose constitutions were not previously rendered dead to the influence of pure air by the state of the atmosphere to which they were accustomed at home, a slight and marked flush in the countenance usually appeared in a short time; this was soon succeeded by a sense of heat and oppression, and a tendency to sleep, more or less marked, according to the condition of the atmosphere, and the extent to which the attention was engaged. The soporific influence in some cases was a source of annoyance to the conclusion of the service, but was succeeded in others by a reaction. The *vis medicatrix naturæ* did not remain inactive. The pulse rose, the circulation was accelerated, the brain became stimulated, and relief was at the same time afforded by the insensible perspiration (which had been arrested by the state of the air) becoming gross and sensible. Attention could now be sustained, but headach more or less severe was the usual consequence, and liability to dangerous colds and rheumatisms, where the body was suddenly exposed to the chilling influence of the external atmosphere, while still affected in the manner described." (p. 42.)

In a moral point of view the ventilation of churches is important. The great difficulty or complete inability which so many feel to keep up the necessary attention to the services, and for which inattention one set of hearers (those whose consciences are most susceptible,) accuse themselves and another set attribute to the dullness of the clergyman, or to the sameness of the routine, depends very much on a cause over which they have no control. The brain is so poisoned by the inhalation of air impregnated by carbonic acid gas, that it is unequal to its functions; so that the exercise of mere attention, not to speak of thought, becomes difficult, and to many almost impossible. And thus the direct object of church attendance is frustrated in a twofold manner: for, as Dr. Reid observes, the same noxious agent which produces the careless indifference of the congregation subdues the preacher's own energies. As so many churches are now building, and the medical man in the country is, or ought to be, an authority on a point in which the health (physical and mental) of so many are concerned, it should be remembered "that the mere packing of the greatest possible number within the smallest possible space, ought not to be the only rule adopted, even in the humblest churches. Health and power of attention to devotional exercises form primary considerations." (p. 45.)

> "In the general disposition and arrangements of new churches, the removal of pews, the closing of all side windows, illumination by the roof, the exclusion of galleries, and the adaptation of the spire as an instrument of ventilation, have often

forced themselves upon my attention as objects of great practical importance, which might be well worthy of consideration, and often introduced with such modifications as peculiar localities may require." (p. 45.)

The effect on the living of burial in towns is a subject on which the medical practitioner is called to pronounce an opinion, and Dr. Reid is strongly opposed to the practice :

> "In ordinary circumstances, the principal part of the body is slowly resolved into gases, and these tend ultimately to form carbonic acid, nitric acid, and water; the most offensive and dangerous products are those that are formed before the full oxygenation ensues." (p. 50.)
>
> "In the great majority of cases, in a climate such as this country presents, the whole area of a long-used and crowded churchyard may be justly considered, in a practical point of view, as a manufactory of pestilential exhalations, perpetually in operation, and so abundantly supplied with the materials of production, that at no time, probably, is their discharge entirely arrested, however marked it may be at some periods compared with others, according to the state of the weather. And, since the laws of the diffusion of gases have been more thoroughly understood, and the practice in the majority of churchyards made known, no one who considers the facts connected with this subject can hesitate to believe that even where the graves are considerably deeper than usual, this newly appreciated power of diffusion must operate incessantly with extreme effect in communicating deleterious products to the superincumbent atmosphere, so long as there is anything to be decomposed " (p. 51.)
>
> "In some churchyards, I have noticed the ground to be absolutely saturated with carbonic acid gas, so that whenever a deep grave was dug, it was filled in a few hours afterwards with such an amount of this gas, that the workmen could not descend without danger." (p. 52.)

The arrangements for purifying burial-grounds and cemeteries must much depend on their special localities; but Dr. Reid gives some hints which are generally appreciable :

> "The mere removal of the large gravestones that cover so many churchyards, the introduction of proper footpaths, and the cultivation of flowers and shrubs, luxuriant in their vegetation, but not lofty or prone to prove any serious impediment to the free flow of air or the action of light, would be of incalculable value in numerous situations, absorbing the products of decomposition, and replacing in general by their purifying influence a better atmosphere than could otherwise be sustained." (p. 52.)

It should be borne in mind that noxious vapours discharged from manufactories may be injurious to the health and comfort of the neighbourhood, and yet the atmosphere within the building may be wholesome; so that the good health of those employed on the premises is no proof that the air without has not been injured. The noxious principles of such emanations may be destroyed, or altered by fire, or may be retained by the action of water, or of water charged with lime; but the difficulty is to render these processes economical, for in many cases such processes would more than consume the profits of the manufacturers. Diagrams are given explaining some of Dr. Reid's plans.

Smoke is one of those increasing nuisances to which the attention of Parliament has been directed. On looking at the murky cloud which overhangs by day our great cities, and contrasting it with the clear canopy above them at sunrise, or with the habitual atmosphere of continental cities where wood alone is burned, and taking into consideration the effect of the constant inhalation of such impure air on the lungs themselves, in which the carbon accumulates until they become blackened, and the inevitably filthy state of the skin which coal-smoke produces in all those who cannot afford, or whose habits are against complete cleanliness, it is impossible not to wish and to look forward to the time when science may show the way by which this carbon may be turned to useful purposes, and its present waste may appear as prodigal as the ancient plan of emptying the scrapings of the streets into the nearest river. But besides the injury which smoke must produce on the health, there is the discomfort attaching to existence in so filthy a medium, soiling our houses, and furniture, and books, and works of art, and marring the artistic effect of our public buildings and monuments.

Dr. Reid thinks that the manufacturers who produce the largest quantities would find it highly economical and advantageous to consume it, that is, when they use larger boilers. "But when too small boilers are employed in proportion to the power required, the necessary amount of steam is not always to be obtained, except by excessive firing, when a large quantity of smoke is almost invariably produced."

> "No cases demonstrate in a more convincing manner the extreme importance of the general introduction of elementary science as a branch of education, than those connected with the use and disposition of fuel, where a little more knowledge on the part of those who manage the fires would be attended with the most beneficial results, and enable them to extend indefinitely improvements in the use of fuel, and in the construction of furnaces." (pp. 63-4.)

It would be a great point gained (says Dr. Reid) if a familiar test for estimating the purity of the air could be applied with the same facility as the thermometer for ascertaining the temperature. He has employed various means, but he has found none so convenient for ordinary purposes, when individuals unacquainted with chemical analysis were to apply them, as lime-water, or a solution of baryta. Carbonic acid is the principal impurity produced by respiration and combustion, and where it predominates other impurities may be expected. A little lime-water or baryta-water in an ounce phial immediately indicates the presence or absence of carbonic acid by the precipitation or non-precipitation of a compound of the earth and the carbonic acid which the air of the apartment may contain. The quantity will depend on the rapidity with which the precipitate takes place. The worst air Dr. Reid has met with was in a printing-office lighted by gas, where the lime-water became coated with a crust as soon as poured out. As there is carbonic acid in common air a white deposit will form on long exposure to the purest air. Experience is necessary, and a practised eye will judge of the purity of the air by merely agitating lime- or baryta-water in a wine glass. In preserving specimens the best mode is to seal the phial hermetically by fusing its neck. For more precise experiments, Dr. Reid has invented a carbonometer, by which the current of impure air is passed through the alkaline solution, and compared with the results obtained by the passage of the same quantity of common air through the same medium. We must refer to Dr. Reid's book for the explanation of the instrument, which is rendered easily comprehensible by diagrams. In all such experiments the operator must take care that the breath from his own nostrils does not vitiate the results.

Ventilation requires an ingress of air from the external atmosphere as well as an egress. It is by the new air entering that the old air is expelled. But in many buildings, where attention has apparently been paid to ventilation, an egress alone exists, and in others large apertures in the ceilings lead to air-tight roofs, where the vitiated air, if the weather is cold, is cooled, and again descends, instead of being conveyed in a distinct channel into the open air. The perfection of ventilation consists in a free supply of air so completely in harmony with the body that its operation is not perceived. Currents or draughts indicate imperfections. It is a common error to suppose, as carbonic acid is a heavy gas, that air vitiated by its evolution in respiration and combustion is also heavy. Carbonic acid gas is only heavy in a concentrated form; but when once mingled with a considerable body of atmospheric air, it does not again separate in consequence of its specific gravity; in proof of which it is found in the air of the highest regions which man has visited. Expired air has, from its heat and moisture, a tendency to ascend; so has air vitiated by combustion: so that, as a general rule, an upward motion should be given to air in ventilation; the air which enters should never return to the zone of respiration. In ordinary apartments a mixed current, lateral at first, and ascending afterwards, is the best. In some instances a forced descending movement is necessary. In his numerous experiments Dr. Reid was satisfied that an amount of diffusion, far beyond what had been previously effected, was necessary; and that, as a general principle, diffusion could not be too universal.

"In a room for an invalid subject to cold or afflicted with consumption, the walls and floor might, if necessary, be rendered entirely porous for the admission of air, and the ceiling arranged in a similar manner for its discharge.

"In ordinary apartments, a great amount of diffusion may be secured by taking advantage of the skirting for this purpose, and in all churches, lecture-rooms, schools, theatres, &c. considerable opportunities are generally presented, particularly in the rising steps, where air can be led in with diffusion.

"In large apartments, occupied by a few individuals only, if the air be admitted at a distance from them, sufficient diffusion may be secured by the extent to which the air may be broken in its course before it reaches them.

"Again, the colder any air used for ventilation, the more important is it to attend to the amount of diffusion.

"An extreme variety of textures have been employed for promoting diffusion, according to the circumstances under which they have been required. Hair-cloth is extremely useful from its perfect elasticity, and from its not being absorbent nor retentive of moisture. Wire-gauze, perforated zinc, and numerous woollen, cotton, hemp, and silk textures have been employed where different materials were required; they may be dyed or painted in imitation of oak, or according to any other pattern, so as to be in unison with the apartment in which they are placed." (pp. 90-1.)

With regard to the power to be employed in ventilation, Dr. Reid concludes that, in a larger proportion of cases, advantage is to be taken of the natural property of vitiated air to ascend, and that when additional force is necessary to sustain the current, no power is so convenient as artificial heat in increasing this natural tendency to ascend. Mechanical instruments, screws, fanners, &c. should be resorted to only when circumstances render these other means too expensive or complicated.

He illustrates this natural ventilation very copiously both by explanations and diagrams. We can merely give an outline of his illustration.

Suppose a room filled with persons standing on a porous floor, with the roof taken off, an upward movement is the consequence; fresh air is introduced below, and the vitiated air passes off above. But an open roof is inadmissible. Protection is required, and the opening above is contracted, and in proportion to the amount of contraction, the temperature of the room, and the numbers on a given space, it becomes necessary to increase the velocity of the discharge. If a shaft or chimney be extended from an opening in or near the ceiling, the volume of warm air that fills it increases the draught; and if this is not sufficient, by kindling a lamp or a fire, or by merely increasing the temperature of the room, additional velocity is given to the column of hot air within the shaft. A chimney, therefore, from its extreme simplicity and from the comparatively trifling attendance it requires, is preferable to machinery. Further, when properly finished at the top, the wind acts as a power, and, without any fire, often determines the ascent of air.

The mode in which the chimney or shaft operates is thus clearly explained.

> "Whenever a heated object is placed, as a candle, the air in contact with it immediately expands, bulk for bulk; accordingly, air near it, but not yet expanded, is pressed under the expanded portion, and a current is thus established towards the source of heat, which is sustained so long as any inequality of temperature continues.
>
> "In the same manner, the air around the human frame is always warmed and expanded as it comes in contact with the body, and, in this condition, an atmosphere at a mean temperature, and not agitated by any wind, is usually elevated about five degrees in its temperature, as it rises and escapes above the head.
>
> "If the candle be introduced into a tube, the current of air which is thus established is more rapid in its ascent, unless the tube be extremely wide. The warm air, not being so accessible to the cold, external air, a greater difference of temperature is established, which is accompanied by a corresponding difference of specific gravity and of velocity in the currents." (pp. 94-5.)

If a candle is placed in the centre of a room, a stream of warm air ascends from it, and colder air presses towards it from every side; the upward stream of warm air having reached the ceiling, passes to the circumference, cools, falls, and on reaching the floor, passes again to the central heat. If a mass of ice is substituted for the candle, the air descends from the cold ice, and all the currents are reversed. In the same way a window in cold weather is always the source of descending currents of cold air, independently of any influx of cold air from without. Such descending currents are a common source of discomfort and of disease, particularly of colds, rheumatism, and inflammations. They should be studiously avoided in churches and halls, and public buildings where there are large windows.

> "I have seen corridors where nearly a thousand square feet of glass were at a temperature below 32°, thickly covered with hoar frost condensed on the interior surface, and pouring down a continuous stream of ice-cold air, while the general temperature of the rest of the corridor varied from 60° to 70°.
>
> "It would probably be a source of permanent economy were all public buildings with large windows, and in daily use in winter, provided in this manner; much less fuel would then be requisite to warm them in cold weather." (pp. 117-8.)

We must refer to the work itself for the chapter on "the elementary illustrations of ventilation," in which are explained, by clear and numerous diagrams, the action of various schemes, and pass to the remarks on gases, air, and respiration.

Extreme mobility, compressibility, and elasticity (says Dr. Reid), are the leading mechanical properties of the air and other gases. No balance is so nicely adjusted as the pressure of one portion of air upon another. Practically speaking, the air is scarcely ever absolutely quiescent, as the most trifling change of its specific gravity by heat or pressure is accompanied by motion and an endless variety of currents and eddies. In those districts where the alternations of hill and dale, land and water, produce unequal temperatures, the most frequent changes are observed. But besides these causes, vegetation, animal life, volcanic agencies, and electricity act in the same way, and prevent any death-like calm. The important discovery of the diffusion of gases has thrown much light on their properties. No one would have expected (says Dr. Reid) that a light and a heavy gas would mix together in opposition to their natural gravities, where no chemical action ensued between them. It is now proved that all gases tend to diffuse themselves through each other, one gas passing into another as if drawn into a vacuum. Light gases even descend and heavy gases ascend to mingle with each other, though the medium of communication is only through a capillary tube, and a considerable force is exerted as they mix. Bring two different gases into communication, and the result is a homogeneous mixture of the two gases without any change of temperature. The velocity of this diffusion depends on the density of the gases. The lighter one gas is, the more rapidly does the heavier gas diffuse itself through it. Atmospheric air, for instance, diffuses itself into hydrogen more quickly than into carbonic acid. In consequence of this, no gas, however heavy, remains at the surface of the earth, and as Graham has observed, if it were not for this provision, the carbonic acid in the lungs would pass and repass indefinitely in the more minute vessels without being conveyed to the external atmosphere. But by this diffusive principle it darts from the air-cells into the bronchial tubes, from which it is expelled by expiration. On the same principle gases pass through numerous porous solids, and (it is considered) the whole body may be permeated by them. Hence the importance of porous clothing to allow the escape of gaseous exhalations from the surface of the body. It has been proved that some porous solids absorb gases and condense them. Many metals in fine powder absorb large quantities of oxygen; charcoal can absorb about ninety times its bulk of ammonia; and soils absorb ammonia, and other substances from the air, which contribute to the growth of vegetables. Thus gases on the earth's surface are subject to two antagonistic powers. By diffusion they are prevented from accumulation in large masses, and by condensation they are reduced to a more useful form where any quantity of their elementary principles is needed. In this condensed form they still retain their gaseous condition, and are supposed neither to be reduced to a solid nor to a liquid state, and the term gaseous condensation is employed.

Moisture is an essential component of atmospheric air. The feeling of damp does not depend on the quantity of moisture alone, but on the tendency of the air to deposit it, and this depends on its temperature. In warm summer weather in this country, there is more moisture in the air than in winter, but it does not feel so damp, as the tendency to deposition is less than in winter. The more moisture there is in the air the larger the amount of air required for the evaporation of the insensible perspiration, and the greater the difficulty for the lungs and skin to cast off the products which are always discharged from them. The 'treacly atmosphere' of warm climates is warm air loaded with moisture, and deposits moisture on the body rather than relieves it by evaporation. Its injury to health is thus evident. In cold climates, the reverse happens; large quantities of moisture are carried away by condensation, and with them a proportion of carbonic acid and other impurities, leaving the residual air more pure. In expeditions to the Polar regions this has been observed.

"When the walls of a crowded apartment run down with moisture, this indicates that the air in contact with them is saturated with moisture, and that they are colder than the air. If they were not, there would be no deposition.

"Again, when a warm south-west wind succeeds a long and severe frost, the same effect is observed. The water that appears does not exude from the walls; it is deposited from the warm air, when its power of solution is diminished by coming in contact with the cold wall." (p. 156.)

The following memoranda explain facts with which we are practically acquainted, although their causes are not always reflected on. The air is almost always colder than the body. The feeling of warmth is owing to the air exerting a less cooling influence than we have been habitually, though unconsciously, used to. The importance of good habits, in accustoming our bodies to cool and fresh air is obvious. The morning air is the freshest and purest from the deposition of moisture during the night, which carries with it many impurities with which it has been contaminated during the day, when it is continually receiving moisture and volatile impurities from the earth. Air on the ocean is saturated with moisture, and contains a little saline matter. Air on the dry land is often deprived of part of its moisture by the absorptive powers of the soil. In spring and summer it contains more oxygen from active vegetation; in autumn, more impurities from putrefaction. It is more impure on imperfectly drained land than on well drained. Clayey soils are less wholesome than gravel, because the latter is more porous, and absorbs impurities more quickly. Sunshine purifies the air by the heat favouring ascending and descending currents, and in promoting oxidation and evaporation. Shade tends to produce stagnation, the air remaining cold on the surface of the earth. The warmth of the air in towns in winter is favorable to health, but this is often counterbalanced by the noxious products of cities.

"In the country, a house situated at a moderate elevation, equally free from the severity of the mountain blast and the stagnation of the valley, not encumbered by trees, nor yet distant from vigorous vegetation on well-drained land, and, above all, so located as to receive the greatest possible amount of the sun's rays in the individual apartments by the arrangement of the windows, a due regard being paid to protection from cold, may be considered as placed in the most favorable circumstances for the promotion of health." (p. 166.)

Winds acquire the qualities of the place over which they pass. Hence the difference to the feelings between the north and the east wind, as contrasted with the south or the west wind.

"The former are essentially cold and dry in general, when compared with the latter; and accordingly, by the free addition of steam, and a proper elevation of temperature, an easterly wind, as it enters any house, may be made to approximate in character to the south-west wind." (p. 167.)

In ventilation, the quantity of fresh air necessary for each individual is the first thing to be determined. In some respects this is a question of expense. The nearest approach of a room to the purity and freshness of the atmosphere would be the most conducive to health, but this air must be warmed so that its purity is sacrificed to warmth, in order to avoid expense. The standard of pure air is unfortunately low, for the air to which an individual is habitually subject becomes his standard, not what is most conducive to his health and strength, and the power of the system in accommodating itself to circumstances is very great.

"The amount of opium, wine, tobacco, ardent spirits, and other substances, which some individuals can habituate themselves to, though only at the expense of impairing their constitutions, is no less remarkable than the varieties of atmosphere, loaded with impurities, in which others can breathe, and even work for years continuously. Perhaps the most singular instance of this kind, exclusive of those met with in polar regions, and in a rude state of society, are to be seen in mines, where it is frequently common for the men to work in an atmosphere too impure to permit a common candle to burn, though an oil lamp, in consequence of its greater tenacity of combustion, may be maintained in action without difficulty. But numerous individuals faint in an atmosphere far less impure than that of some coal-mines, and even death has been considered to have ensued in some instances from vitiated air, though it was not sufficiently impure to extinguish a candle, no impurity but carbonic acid being known to have been present." (p. 179.)

"But confining our attention to an average temperature, and to any ordinary apartment not overcrowded with many persons, and not subject to any peculiar or noxious emanation, it is considered that ten cubic feet per minute should be provided for each individual.

"This estimate is given with much diffidence, and only as an approximation. It is the result, however, of an extreme variety of experiments made on hundreds of different constitutions, supplied one by one with given amounts of air, and also in numerous assemblies and meetings, where there were means for estimating the quantity of air with which they were provided." (pp. 175-6.)

For the modes in which these experiments were made, we must refer to the diagrams and explanations of Dr. Reid's volume.

"If we look to the fact that less than half a cubic foot of air passes through the lungs of an adult in a minute, this estimate may at first appear excessive; but if we remember that, at each expiration, a quantity of air is emitted which mingles with an additional portion of air exceeding largely its own bulk, and that there are twenty such respirations per minute, while provision is also required for the air that affects the surface of the body, and for the endless variety of minor effects produced by furniture, lighting, heating, refreshments, &c., where no peculiar adaptations for these purposes have been introduced beyond those usually observed, it will be seen that the estimate is by no means immoderate. The real question is, not what the constitution can bear, but that amount which is conveniently accessible in ordinary habitations, and which is essential for the wants of the system." (pp. 178-9.)

The connexion between the appetite and respiration, has been amply descanted upon by Liebig, who has shown more fully than his predecessors how much more food is taken and required, when the lungs are supplied with pure and highly oxygenated air. The converse is true, that a low diet diminishes the necessity for much air, and that where there is little air, there cannot be a great appetite for food. Dr. Reid illustrates this by an anecdote. Some years ago, fifty members of one of the Royal Society Clubs at Edinburgh, dined in an apartment he had constructed so that all the products of the combustion of the gas with which it was lighted were removed, and large quantities of a mild air were constantly supplied, and passed in quick succession through the room during the whole evening, variously perfumed with the odours of flowers. Mr. Barry of the British hotel, was familiar with the constitutions of these intellectual sybarites, and amazed the committee the next day by proving to them that the sage who had usually taken two glasses, had consumed his half bottle, and the philosopher whose usual quantum was half a bottle, had taken a bottle and a half; for three times the quantity of wine had been drunk than was usually imbibed by the same party, in a room lighted with gas and unventilated. And what is as curious, both from its scientific interest, and from its illustrating one of the customs of modern Athens, Dr. Reid, with his usual statistical gravity and earnestness, assures his readers that "minute inquiries afterwards assured me that no headache had followed" this dinner, but adds "nor were any of the members aware that they had partaken more heartily than usual;" which obliviousness admits of two interpretations.

Another example of the same fact is even more striking. Some manufacturers have stated that their men "struck for wages where a good system of ventilation had been introduced, as their former wages were insufficient to procure them the increased amount of food which their appetites now demanded," and indeed "no argument is more common against ventilation among many, than the expensive appetite it maintains."

The cheap refreshment rooms in London are ill-ventilated. "Many a hard-worked clerk too often imagines he has had enough for his support, because he has taken all that his appetite permitted; whereas the saturated atmosphere in which he dines may have reduced his appetite by a half, and made him contented with an inadequate supply." We need not expose the importance of this connexion between the air breathed and the appetite in a medical point of view. It explains the tonic effect of pure air, and throws some light on the reason why our higher classes who live so much more than the middle ones in the open air, and when within, are in much larger rooms, can live so much higher with more impunity.

The amount of moisture in the air affects the supply required. Where the air is moist and warm, a much larger quantity is required to carry off the pulmonary and cutaneous exhalations than when the air is dry, so that 100 cubic feet of moist and warm air do not give so much relief as a few cubic feet of dry.

Dr. Reid has found that a temperature of 65° is most generally agreeable in rooms not over crowded, the atmosphere moving in a gentle stream. Its effect on the bodily feelings is greatly influenced by the rate at which it moves. The air, as has been before stated, is almost always below the heat of the body, but if it is stagnant it does not produce much cooling effect as a minute quantity comes into contact with the body in a given time. But if the wind blow freely, many successive quantities approach the body in the same time, and a sensation of cold is produced. "An air at a very low temperature is not dangerous in a calm, but if it begins to blow, the face and limbs may soon be frost-bitten." Thus in ventilation, if the air was below the temperature of the body, the same atmosphere which is offensively cold, might be rendered pleasant by reducing its velocity, and a sultry atmosphere might be rendered cool by increasing its velocity. If the air is hotter than the body, increasing its velocity, increases the sensation of heat on the same principle.

The moisture which the air contains is next in importance to its temperature. The body and limbs form a vast surface, covered with millions of pores, from which moisture is continually escaping, or is absorbed, according to the state of the air. Hence the relief or the oppression of the system shows the state of the air. The drier the air the greater its power of dissolving this moisture. In winter, the colder the air the freer from moisture, as it deposits what it held in solution. Hence its effect in making the skin harsh and dry. The mucous linings of the nostrils and fauces feel dry and dusty, a disposition to cough ensues, as they are deprived of part of the moisture essential to their functions. Hence the necessity of communicating moisture to air which is artificially warmed in winter. Where there are great numbers in a room, it is difficult to maintain a pleasant temperature, unless by a great movement of air. Dr. Reid has found that air introduced at the floor at 60° became 70° and 80° before it reached the head, if the crowd was great.

> "In the lower deck of a man-of-war, I have repeatedly noticed a difference of 11 and 12 degrees in winter between the temperature at the floor of the lower deck, where the air was permitted to enter, and that of the atmosphere about five feet above on the same deck, where the hammocks were suspended. In railway coaches, ordinary mail coaches, and other vehicles, during winter, a difference to the same amount may be frequently observed, if the windows be shut and no ventilation permitted, between the temperature of the air around the head, and that in contact with the foot. And, in general, it may be noticed, that the play of aerial currents often presents very great differences of temperature within spaces exceedingly near, and even within the same apartment, so that, in the erect posture, the feet may be exceeding cold, while the head is oppressed with heat; or, air may be tolerable in the body of a theatre, and oppressive, in the extreme, in the galleries; or it may be only comfortable in the latter, and intolerable from its cold below." (pp. 185-6.)

The demand for heat varies in different individuals, according to constitutional peculiarities, diet, clothing, excitement, exercise, time of life, and manner in which they are occupied. It should be lower and lower the more recently any food has been taken, and the larger the quantity. When exhausted by long-continued watching and attention to objects involving no bodily exertion, the heat may be increased many degrees with advantage. In spring and summer the warmth enables the air to gather moisture from the earth and sea, and to hold it in more perfect solution. The magnitude of the function of perspiration and the influence of moisture in retarding, and of dry air in quenching, its operations, explain the risks which are run in change of climate without that change of diet and habits which is in unison with it.

Dr. Reid glances only on the effects of light and electricity on the body. The marked influence which we know that light produces on plants in promoting their powers of absorbing carbon and throwing out oxygen, render it not impossible that light may be a more important agent in our own economy than we are aware of. But precise observation is wanting. Dr. Reid mentions that in a barrack in St. Petersburg, three cases of disease occurred on the shady side of the building to one on the other, though the rooms on both sides communicated, and the discipline, diet, and treatment were the same. In experiments on his own respiration, he found that he recovered more rapidly when exposed freely to light, as well as to air; and he is convinced, from experiments in white, black, green, and other painted rooms, that "a very different influence is produced upon the body by rooms differently painted." We quote "these guesses at truth" to stimulate others who are calculated for such inquiries to investigate this important subject more fully. The London Electrical Society are collecting facts on the connexion between the electrical state of the atmosphere and the presence of diseases,—a connexion with which invalids with susceptible nervous systems, who are attentive self-observers, are very conscious of; no electrometer indicating with more certainty the presence of electricity than their feelings in thundery weather. On this obscure subject we may expect that chemistry will eventually throw much light. The analogy between nervous power and electricity, the facility with which some persons part with their electricity, as their hair often indicates, and the power of retaining it which others possess, so that one man, when placed on an isolated stool, and charged with an electrical machine, gives out again the electricity so freely that a conductor gives no indications of its presence, whilst another becomes fully charged; the effects of certain clothing, and of metallic rings, in rheumatic neuralgias, are isolated facts; but the discovery of the general laws on which they depend must not only improve the hygienic treatment of many diseases, but be essential to the rational application of electricity or galvanism as a therapeutic agent. For at present it is an empirical remedy; and, like all such, it occasionally cures, but in the majority of cases fails; and as we know not why it cures or why it fails, we have no rules to guide us in its application. Can we be surprised at any want of success when it may be indiscriminately thrown into the body of one who has too much already, or of one who has too little, and perhaps without any attention to the course of the current, so that an operator may be counteracting nature by driving his electricity through the nerves in a wrong direction?

*Vitiated air.* In a practical point, the following impurities require the most attention?

1. Carbonic acid. Air containing even one per cent. of this gas is unwholesome, but by habit a much larger quantity may be borne, just like excess of wine or beer, without any immediate ill consequences, but ultimately with diminution of appetite and strength. Dr. Reid has been exposed to air of a high temperature containing ten per cent. of carbonic acid, but he does not think he could have resisted its deleterious action unless it had been gradually deteriorated. The weaker the constitution the less easily is this borne. The symptoms produced by even a small quantity are headache, and various degrees of oppression. On recovering from insensibility produced by this gas, the individual is unable to moan

or to move for hours, although sensible, and his head feels like a mass of lead chained to a rock.

2. Carbonic oxide. This is produced by imperfect combustion, where there is much carbon. Coal-gas is offensive to many constitutions, even in small quantities. Fire-damp contains less carbon than coal-gas prepared artificially, and has less smell, though both are equally obnoxious to life; miners, however, work in an atmosphere where there is a considerable proportion of fire-damp.

3. Sulphuretted hydrogen is the common product of the putrefaction of animal matter, and of sea-water, subjected, in a limited atmosphere, to the action of organic matter. Lime or mortar in drains evolve it when in contact with some acid. Even one 15,000th part has been known to be injurious.

4. Sulphurous acid. This gas, the same as is produced by burning sulphur, escapes in many chemical operations from manufactories.

5. Hydrochloric (or muriatic) acid is disengaged in many processes. This escapes daily from the chimneys of British barilla, or soda manufactories, the effect of which is apparent on the surrounding vegetation. Dr. Reid has tested it in the air two miles from the lofty chimney from which it was discharged. It is readily absorbed by water, and in this way sometimes got rid of. In small streams it may destroy fish, but where there is a great flow, and the water impure, it may be beneficial.

6. Ammonia is a common impurity where there is animal matter undergoing decomposition.

7. Arsenic, copper, and lead are often suspended in the air, as the state of vegetation proves, in the neighbourhood of manufactories, where they are used. Tallow candles hardened by arsenic so as to look like wax, must be very injurious. Besides these impurities, there are those of malaria, and the principles of contagious diseases, which have escaped the chemist's power of analysis, and the more obvious mechanical impurities from the degradation of roads, the ordinary impurities left in streets, smoke, &c. Some articles of furniture give an unpleasant smell to rooms, especially when unventilated. In the present state of science, the nose of the practitioner is the only test of these sources of impurity, to which he should be alive when investigating the causes of disease.

*Purification of the air.* If it be possible, offensive emanations should be destroyed at their source, thus striking at the root of the evil. When this is impossible, as in many manufactories, a system of ventilation, and an adaptation of proper chemical agents is necessary, such as require professional knowledge. Dr. Reid gives a few practical observations on fumigation, which are generally useful.

Lime-whiting owes its efficacy to quicklime absorbing carbonic acid from the air, or from organic substances with which it is mingled, and to its causticity which destroys animalculæ, and decomposes animal or vegetable matter. The more fresh and recently slaked the better. When it loses its causticity, it has become carbonated like chalk, and comparatively useless, and fresh whitewashing is necessary. Chlorine acts by dehydrogenating. It decomposes organic compounds by uniting with their hydrogen and forming muriatic acid. Chloride of lime owes its efficacy to the small quantities of chlorine which it evolves for a considerable time, and is the most convenient form for supplying chlorine. The addition of sulphuric or muriatic acid increases the evolution of chlorine, but although a small quantity does not irritate the lungs, large quantities are very irritating, and should never be evolved in an inhabited apartment. Nitrous or nitric acid vapours are convenient, as they may be used without removing the patient. For this purpose, nitre may be thrown into an equal weight, or two thirds of its weight of sulphuric acid in a small cup, resting in sand, and held over the fire in an iron ladle until there is a slight appearance of white fumes. A greater heat volatilizes the sulphuric acid and produces excessively irritating vapours. In uninhabited rooms, such as cellars, the most powerful fumigation may be used by pouring sixty parts of common salt with one hundred of nitre into two hundred of sulphuric acid heated in the same way, or by boiling a mixture of nitric and muriatic acid: chlorine and nitrous acid are evolved. But this is not so desirable as lime-whiting. Vinegar does not purify the air, but rather disguises bad air by its more agreeable smell. Ammonia purifies by uniting with carbonic acid, and on this account is very refreshing to many. Excessive heat decomposes and renders innocuous infectious matters. For this purpose, where other means cannot be used, rooms when uninhabited should be heated by coke or charcoal to 212°.

*Artificial atmospheres.* We do not recollect to have seen the importance of ventilation more forcibly illustrated than by the following simple arithmetical calculation:

> "What frequent repetition of any ordinary prescription can ever approximate to,
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> | | | | |
> |---|---|---|---|
> | 20 | distinct and separate impulses in | 1 minute. |
> | 1200 | ,, | ,, | 1 hour. |
> | 28,800 | ,, | ,, | 24 hours. |
>
> and all these acting, not upon a secondary organ—not subject to any intermixture with the food or products of digestion—but conveyed directly to the blood in the lungs, and presented to an area many times exceeding that of the surface of the body!" (p. 217.)

It also encourages us to hope that chemistry in connexion with practical medicine may teach us to introduce our remedies through this most natural inlet with better success than has yet attended our efforts in this direction. For we all must confess that inhalations as commonly employed are of little real service in the treatment of pulmonary diseases. Smoking tobacco and stramonium are almost the only exceptions. But to breathe through the tube of an inhaler for a short time several times a day, or to use medicated vapour baths once a day, or even less frequently, are shown by this plain preamble to be very insufficient proceedings, hardly worthy of the name of remedies, mere placebos by which the practitioner appears to do something when he really effects nothing. Besides the regulation of the temperature, dryness or moisture of the apartments, the rational plan must be to impregnate the air which is habitually inspired with gaseous remedies, and so to carry off with facility the noxious products which are exhaled from the body. Dr. Reid gives a list of twenty-three gaseous ingredients which may thus be employed ,and which can be introduced, and in determinated quantities, with facility in apartments and air-baths he has constructed, in which the chemicals are conveyed to a ventiduct, through which all the air of the room or bath enters. Such experiments must be tested in our hospitals.

> "By constructing a few chambers in every hospital, where the quality of the air that passes the zone of respiration might be entirely under control, and medicated, heated, dried, moistened, cooled, and applied in any quantity, as circumstances might dictate, a more specific power would be obtained, capable of being applied advantageously in numerous cases of disease." (p. 217.)

Part Third of this volume is on the production and communication of heat and light; and amongst much matter which is chiefly of interest to the architect or to those who are planning new residences, there are observations which may be of service to the medical practitioner.

All clothing of close texture, which prevents exhalation from the skin, and renders it damp from condensation, is injurious. The advantage of woollen stuffs, and especially flannel, in this country, where there are great changes both in temperature and moisture, is owing to their warmth, as powerful non-conductors, and their porosity. Air-tight boots are injurious to invalids; and we would add, cloth boots, the tops of which are lined with mackintosh, which keep the feet of the invalid damp and cold from retaining and condensing the perspiration. The following remark is judicious:

> "Were the amount and quality of clothing more frequently adapted in this country to the state of the atmosphere to be encountered, whether at home, in the open air, in churches, or in assemblies, innumerable cases of disease would be prevented." (p. 227.)

The point to be aimed at is to avoid sudden transitions of temperature, and draughts, and to keep up an agreeable but not an oppressive warmth.

No one is more aware than those in our profession how much more refreshing sleep is when the clothes are taken off; so that none but very "young hands" refuse a bed and prefer a sofa: Dr. Reid explains the fact by the comparative freedom with which cutaneous exhalation goes on in bed when the day clothes are removed.

While admitting the utility and importance of close stoves of a low temperature, especially of Dr. Arnott's, in particular cases, we heartily join with Dr. Reid in his praise of an open fire for common sitting-rooms. It circulates the air and ventilates the room; it enables you to apply just the quantity of warmth you wish, as you can regulate both its size and briskness and your distance from it; the warmth it gives is more stimulating and exhilarating from its accompanying light, which acts upon the mind by its beauty, cheerfulness, and life, so that it has the effect of a living companion.

What is called the cottage grate is the most agreeable fireplace, and the most scientific. It should be placed low down, with an ashpit immediately beneath (so that the fire is fed by air entering in front only), and with a blower above, which can be easily raised or lowered. The object is to heat the floor as warm air rises; and the brick back readily radiates the heat, and does not, like iron, conduct much of it up the chimney. A plan with diagrams is given.

Dr. Reid greatly praises coke, soft-burnt, in small pieces not bigger than a walnut, wihch is not deprived of all its gas, and kindles easily. It gives a cheerful and agreeable warmth, without smoke. Some object to coke, as if it produced bad air; but it only produces the same gas, minus the smoke of coal, and on this account its escape into the room is not so soon recognized and prevented. The cottage grate is well adapted to coke. The advantage of stoves is that they are cheaper, cleaner, less limited in their action, and require less attendance; but it must always be remembered "that they will not ventilate rooms like an ordinary fire, and the ventilation must be attended to independently." They are more economical, but they are less wholesome, for their economy depends on the small quantity of air which is removed by them. Dr. Ure, in his evidence before the House of Commons, said he is sure that if Dr. Reid had ever experienced the effect of stove-heated rooms of Russia, Sweden, or Germany, he would deprecate their imitation in this country, as the greatest of evils. Dr. Reid replies with the true "nemo me impune lacessit" feeling, "I must tell Dr. Ure that I have examined well-managed stoves abroad, and that none produce a more mild, genial, and equable temperature." He refers to those used by Berzelius and Mitscherlich as perfect as it is possible to procure. But this is no answer to Dr. Ure. It may be true that scientific men, or those to whom expense is no object, will remedy the unhealthy closeness of a stove warmth, by sufficient ventilation; but we can conceive nothing more prejudicial to the health than the stove-heated rooms of the poorer classes in the countries Dr. Ure mentions. Enter the cottage of a German peasant in the depth of winter, and you are almost suffocated with the close hot-house heat, and stench, and you leave it in a state of perspiration. Everything is sacrificed to cheap warmth; and those who do not lead a life of hard labour in the open fields (which, fortunately for them, is the case with the majority of the men, and of nearly all the women,) show its baneful effects in their pallid appearance. In this country, the use of close stoves in counting-houses, and rooms of business where individuals are kept many hours of the day to a close sedentary employment, is often most prejudicial to the health; for the almost inevitable tendency is to neglect due ventilation, especially when the introduction of fresh air diminishes the feeling of warmth. An individual may become accustomed to impure air, so as to be unconscious that it impairs his strength; but the very debility which this produces, renders warmth more essential to his immediate comfort, and leads him to insure warmth, to the neglect of pure air. We can fully agree with Dr. Ure, that the common substitution of stoves for open fires in this country, would be a great evil, whilst agreeing with Dr. Reid that a Berzelius or an Arnott might warm his study or laboratory by the same application of heat, and, without any detriment to his health, he might save much dirt, expense, and attendance. Poets tell us of "skiey influences," and of the silent and unconscious effects of mountains or plains upon the minds of their inhabitants; and it may be asked whether the substitution of a dark black iron mass for the cheery living fire, would not unconsciously make its owner a duller man, and quench his imagination and vivacity. If it is so, however, the inventor of our English stove is a proof against his own invention; though it may be asked by those curious in the action of matter upon mind, whether the gloomy stove-warmed rooms of the Germans have not had some influence on their mind, in driving them into themselves, and leading them to cultivate the world within them, rather than to observe that which is without. But in such an estimate, the pipe should not be forgotten—the most *subjective* in its tendency of all pleasures.

The plan of warming by hot water was invented in France during the last century, but systematized and strongly advocated in this country by the Marquis of Chabannes, twenty-five years ago. The principle on which it acts is that cold water, from being specifically heavier than warm, always descends, and pushes up the warmer water. In this way, a reservoir of water heated at the kitchen fire, connected with similar reservoirs on each story of a house by means of an ascending and descending pipe, warms the whole—a constant circulation going on as long as heat is applied to the boiler below, and lost in the apartments above, which it warms. It is a convenient plan in hospitals for supplying each floor with hot water. Dr. Reid fully illustrates the subject by diagrams. Hot water is more convenient than steam, as any degree of heat below 212° can be obtained; whereas, steam-pipes must either be kept in full action or not in action at all.

Whether light be obtained from oil, candles, or gas, it is gas that is burned; so that a lamp or candle may be regarded as a small gas manufactory, and, like a fire, it deteriorates the air. The amount of light depends on the carbon, in its minute state of division, being heated more or less. If air is supplied too freely, so that the carbon is at once oxygenated, the flame is of a pale blue, as at the base of the luminous cone of the flame of a candle. If the supply be defective, carbon passes off unconsumed as smoke. To obtain the brightest light, the supply of air must be so regulated as to suspend the carbon in the flame for a short time before it is consumed, and thus to heat it to a white heat, like a white-hot cinder in a furnace. This is attempted in the argand and solar lamps, and in the Bude light. The flame of a candle is a hollow cone, within which is unconsumed gas. In the argand lamp, air is introduced into the centre of the flame, so that both its outer and inner surfaces being freely supplied with air, are in an equal state of combustion, and consequently the carbon is more intensely heated.

In the solar lamp, instead of the air being permitted to ascend in the usual manner around the flame, it is made to strike upon that part of the flame where it is most important to have a sufficient supply by means of the curved director or shield. In the Bude light, oil and oxygen were at first used, but now merely air and coal gas, so that it is only an improved gas burner; the gas-burner consisting of concentric rings of tubes perforated in their upper surface, and the gas being heated before it escapes, so that the carbon is more instantaneously heated. Each light, as has been before stated, is in fact a small fire, and in like manner it deteriorates the air. Carbonic acid and water are the common results of combustion; small quantities of uncondensed gas escape; carbon as smoke, and small portions of tallow, oil and other special matters become suspended in the air. Where the amount of light is small, this is of no great importance, but wherever a high degree of illumination is required, these impurities should be carried off by ventilation before they mix with the air of the room. We must again refer to Dr. Reid's diagrams to explain clearly his plans for this purpose. It is our business when consulted to urge their adoption, the arrangements must be left to others.

Part iv contains a copious explanation with diagrams of the processes for ventilation which Dr. Reid has introduced into the present Houses of Parliament.

The House of Commons has been turned into a large pneumatic machine. All the air is introduced into a series of chambers beneath the house through an opening fifty feet square, over which is suspended a fibrous veil to detain any mechanical impurities as soot, 200,000 visible pieces of which it has stopped in one evening. Having passed through this opening, the air is heated, or cooled, or dried, or charged with moisture as may be required, in the various chambers appointed for these purposes, and having attained an equalizing chamber, it passes upwards into the House through the floor, which is perforated with millions of holes, and covered by a hair-cloth carpet, in order to insure its equable diffusion. It escapes above into a foul-air chamber above the roof, and from thence into a channel which conveys it to a shaft, the ventilating power of which is increased by a fire within it. The channel through which it escapes is controlled by a single valve, by which the velocity of the air and its temperature is readily adjusted, and the area of the opening by which the air is discharged, is as large as that where it is admitted. The House is heated to 62° before it is opened, and is maintained at a temperature between 63° and 70°. In extremely warm weather, air at 75° has been rendered agreeable to the feelings, by increasing its velocity. At night during summer after the members have left, cold air—produced by the evaporation of water, by the cold-water apparatus, or even by ice—is drawn through the House. Such is a slight sketch of Dr. Reid's plan. He is so little of an egotist, that he never directly informs us of the success of his plans, though we presume by the continuance of his appointment, that the results are on the whole satisfactory. That he has made the air more wholesome cannot be doubted, but as the individuals subjected to his processes judge more from their own sensations of comfort than from scientific rules, as to the atmosphere best suited to their health and strength, he may not give universal satisfaction. He mentions meeting one member coming out, saying " we shall be suffocated immediately," and another following him with the exclamation " I am shivering with cold;" reminding us of the old story of the travellers on the mountain. And after all a medium atmosphere is the only one he can attempt, and this will strike the honorable member who comes in warm from exercise as oppressive, and another who comes cold from his carriage, as chilly. The speaker and sergeant-at-arms, who remain sometimes ten or twelve hours at a time have their own atmosphere under their own control.

The House is lighted by " exclusive lighting," that is, the gas lights are cut off by glass from communication with the apartment itself. The products of the combustion of each burner are carried off by smaller channels into leading lines of communication on either side of the house, which open into a ventilating shaft. The means best adapted for ventilation have likewise aided in the better communication of sound, a point of the greatest importance. The principal causes of defect were: the great height of the ceiling by which much sound was lost, the soft and yielding canvass with which the ceiling and walls were covered; the noises entering the windows when open for ventilation; the floorcloth with which for durability the House was covered, and the locking and opening of the doors. By lowering the ceiling (in order to get room for a foul-air chamber above,) less amount of voice became necessary to fill the house; at first from the same cause, the noise of conversation was louder. But the members soon learnt to pitch their voices in a lower tone, unless when talking for the express purpose of interruption. The walls were covered with reflecting wood panels, and the glass ceiling greatly assisted the reflection of sound; whilst the opening in the ceiling and the porous floor, allowed the useless impulses of sound to escape, and thus prevented offensive reverberations; for it is essential to the free sound of one syllable, that the remaining sound of the preceding one should be discharged, and not interfere with it. The unity of the temperature promotes unity of sound; the haircloth carpet prevents noise, and the double windows which have not been opened for seven years, exclude it.

Dr. Reid has had personal experience in practical acoustics. As a teacher of practical chemistry in Edinburgh—and a more laborious, earnest, and indefatigable one never lectured even in that industrious school—he had to address successive classes for seven and eight hours daily; and he built his classroom so as to enable him to do this with the least labour. He depended on a low and reflecting roof, the reduction of the walls to the least height compatible with the wants of the place, and on a rough absorbing earthen floor, and so successful was he, that whether his classroom were crowded or empty, either a whisper or the loudest sound was heard distinctly without any offensive reverberation, and he was enabled to lecture without raising his voice above the conversational tone.

The remainder of the volume is occupied with observations on the ventilation of theatres, coaches, ships, and mines, with plans and diagrams. The remarks on the ventilation of ships seem well worthy the attention both of the medical officers of the navy, and of that numerous body who are now engaged in the capacity of surgeons to merchant vessels and steam-ships. The proper ventilation of mines is of vast importance from the numbers who are engaged in them, and from the impure air to which they are exposed. Indeed it is a question, says Dr. Reid, whether more lives are not lost from impure air undermining the constitution gradually than from explosions and other accidents. The benefit of the Davy lamp in saving lives cannot be denied, but its benefits are lessened if it is used not merely as a protection from momentary dangers, but to enable the miner to work in a less wholesome atmosphere, by affording him light in air highly charged with a deleterious gas.

Dr. Reid has devoted a chapter to the consideration of the mutual relations of architecture and ventilation. He is justly of opinion that ventilation will never be placed on the footing which the progress of science, and the claims of health equally demand, till the means for ensuring its efficient application, shall be incorporated with the original design in all architectural structures, whether habitations, public buildings, ships, or manufactories. He adverts in strong terms also to the great importance of introducing among all classes of society a more precise knowledge both as to the movements of air, and the quantity necessary for respiration, urging the general introduction of select lessons in practical science in all schools and academies, as the only certain means of promoting equally the introduction of the proper measures by architects and their subsequent management by those who are more immediately affected by them. The book as a whole is rather deficient in method and unity, which could only have been attained by more time in polishing, condensing, and rewriting than its author probably had to bestow. Its matter, however, is good. It is written not to gain experience, but to give the result of experience, and we cordially recommend it to all who are interested in the subject, The reading of medical men is from their occupations so limited to what seems of immediate practical interest, that comparatively few would go through a thick octavo volume on ventilation. To these who would be deterred, we have supplied an analysis of those parts which they would have been interested in from their immediate practical bearing, had they been the readers instead of ourselves. If the result is merely to lead them to open their own windows more frequently, to be more observant of the air of their patient's rooms, to remove those mischievous chimney-boards from the fireplaces of their sick patients' bedrooms, and to supply the Toynbee ventilators* to the windows of the poor, who are confined in small rooms as more essential than any medicines, it will not have proved a useless one.

## Art. II.

*Lectures on the more important Diseases of the Thoracic and Abdominal Viscera, delivered in the University of Pennsylvania.* By N. Chapman, M.D., Professor of the Theory and Practice of Medicine, &c. &c.—*Philadelphia,* 1844. 8vo, pp. 384.

Medical research proceeds with untiring activity. Modern times may justly boast of the successful zeal with which the accessory sciences are cultivated; but it must be acknowledged that the practice of medicine fails as an art to make commensurate progress. This fact may be partly attributable to the greater facility with which distinction is attainable by the cultivation of some one more distinct field of inquiry, and to the greater arduousness of those exertions which require for their efficiency a judicious adaptation of means derived from many sources. Whatever be the explanation, the circumstance is much to be regretted. Great as is the value of collateral knowledge, the primary object of the physician is to subdue disease; and his duty is neglected on insufficient grounds if he spends his time inquiring "what news?" instead of combining his resources against the common enemy. Under such convictions we examine with especial interest any respectable contribution to practical medicine; and recognizing the world as the field of medical labour, gladly embrace any opportunity of recording the proceedings of our brethren in other countries.

The work which we now introduce to our readers represents the opinions of one of the oldest, and therefore it is to be presumed one of the most experienced physicians of America, on several important diseases especially prevalent in that country. A considerable proportion of the professors of our art may be divided into those who teach without practising, and those who practise without teaching. Among those who combine these offices are to be found some of the most valuable members of the medical community; and the author of the work before us, notwithstanding certain striking defects in its execution, is entitled to the favorable consideration of his professional brethren. The topics introduced are too numerous to allow of more than a cursory notice, but we shall endeavour to report any peculiar opinion which Dr. Chapman may entertain, as well as any particular facts which his position in the New World may have given him especial opportunities of observing.

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* See British and Foreign Medical Review for October 1844, p. 501.

I. Thoracic Diseases. The affections treated under this head, are phthisis, cynanche laryngea, asthma, and angina pectoris. With the exception of the second disease, fully noticed in our last Number, we shall give some account of these in order.

*Phthisis.* In the chapter on phthisis with which the volume commences, Dr. Chapman claims for Sylvius de la Boe (A.D. 1679) the credit of first accurately describing the disease, and advances the opinion that little of importance has been added to the remarks subsequently published on the subject by Starke. He discusses the nature of the granular tubercles described by Bayle; on the one hand, differing from Laennec and Louis, who consider them essentially the same as genuine tubercles; and on the other hand, from Andral who regards them as hepatized granulations unusually indurated. Dr. Chapman considers them as tuberculoid rather than tubercular, and the result of inflammation in subjects partaking of the tubercular diathesis.

The author is a strong advocate of the independence of phthisis and scrofula:

> "Contrasted with the scrofulous, it is in the first place to be stated, that with little of the external physiognomy appertaining to that state, it (consumption) has its own peculiar physical structure and aspect, among the features of which are the long delicate neck; narrow flat, chest; prominent shoulders, high cheek-bones, long arms, large hands and feet, dark hair and eyes, with lengthened and tapering lashes, thick skin and dingy complexion.
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> "They also differ in some particulars, in the moral and intellectual constitution with which they are associated. As soon as the strumous habit becomes oppressed by an affection of the organs of the cavities, all vivacity is exchanged for gloom, petulance and querulousness. The tubercular on the contrary retains its original qualities throughout, in all stages, and in every fluctuation.
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> "Further and material differences are recognizable in the two affections, the strumous being most prevalent in childhood or youth, and the tubercular in maturer age. The former too, assails both the internal and external structures, while the latter takes a centripetal direction only.
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> "Nor is their mode of approach the same or even bearing a close similitude. It is undeniable that scrofula in early life especially, nearly always, at first betrays itself by disorder of the chylopoietic viscera; irregular appetite; bad digestion; vitiated alvine discharges; tumid abdomen, &c. All which may be relieved by a translation to the surface. Tubercular formations have no such signs, or in their progress even manifest any disposition to metastasis, or change of position." (pp. 24-5.)

We are far from subscribing to the accuracy of many of these so-called distinctions; and when we find our author adding, as the crowning discrepancy of the two affections, a positive pathological difference, which does not exist, our distrust of the validity of his arguments becomes greatly enhanced.

> "But," continues Dr. Chapman, "the great and irreconcilable distinction between these affections consists in tubercles being altogether an extraneous production, and strumous tumours, degenerations of lymphatic glands. The first is a new creation of an irregular nutrition, while the other is the diseased growth of a natural pre-existing organ." (p. 25.)

Our readers do not require to be told that all the best pathologists have long taught that precisely the same "extraneous production" exists in "strumous tumours" as in the lungs in phthisis.

Dr. Chapman has observed some striking instances of the suspension of phthisis by gestation, but he always found the disease return with aggravation after delivery, and hurry on to a fatal termination. He is of opinion that phthisis is often suspended by other diseases, such as mania, chronic eruptions, gout and rheumatism.

> "There is indeed a mixed variety of the latter affections, attacking more especially the smaller joints, inducing permanent enlargements, and deposits of calcareous matter, which so strongly exercises such an influence, that it may almost be deemed a cure. Three instances of its conspicuous efficacy in this way, have come under my notice. The same is partly true of fistula in ano. Consumption and it are often coincident, the former being generally checked or mitigated by the latter. This however healing, which is very difficult to accomplish, under such circumstances, the pulmonary affection I have uniformly found to be immediately exasperated to a fatal issue." (p. 44.)

The above observation on the influence of fistula corresponds with our own experience.

On the subject of *treatment* in phthisis we find little to extract of a satisfactory character. Dr. Chapman believes life to be occasionally prolonged by the conversion of the cavity into a fistulous state, but "the alleged curability of matured tubercles is refuted by experience." The only remedy of which the author speaks with much approbation, is nitrate of potash, which he thinks very useful in allaying inordinate action, as much as half an ounce being given daily in a quart of water.

His opinions of the expedient of medicated inhalation, more especially of the vapours of iodine and chlorine, are embodied in the following passage:

> "Each of these fumes I have repeatedly tried, and though I cannot say that I ever accomplished even an approximation to a cure by them, I am persuaded, that they are deserving of some attention. Moreover, the vapour of the chloride of lime has been fully used by me, which, as equally, or perhaps more efficacious, and being prepared with greater convenience. is, on the whole, to be preferred. Though this practice may not do more, it often allays cough, facilitates expectoration, diminishes or corrects purulent and other secretions, abating at the same time most sensibly hectic irritation, and hence appears the best suited to the affections of the mucous surfaces of the windpipe, and its ramifications. Yet there are cases with an excess of irritability of this structure, in which it is not tolerated, and if persisted in, is evidently productive of harm." (p. 71.)

In the treatment of hectic fever, Dr. Chapman recommends drachm doses of distilled vinegar to be given in sugared water every two or three hours. The night-sweats, which he attributes to debility of the exhalents, he thinks may be moderated by sleeping in flannel, rubbing the skin with a solution of one drachm of alum in half a pint of brandy, and administering mild diuretics such as water-melons, parsley-tea, or soda-water.

We believe the truth respecting the influence of marshy situations is pretty fairly conveyed in the remark—"It is possible that consumption might be suspended *temporarily* by the prepotency of intermittents." Milk and farinaceous diet are recommended, but asses' milk is not considered entitled to a preference, unless in the language of the celebrated Harvey, "the patient be an ass." Dr. Chapman considers the opinion of Stoll, that whenever a consumptive patient mounts a horse, he commences a journey to the river Styx, "as correct when applied to cases in which the inflammatory diathesis prevails;" but in other instances he concurs in the recommendation of Sydenham and Fuller, the latter of whom quaintly remarks that a consumptive patient should be like an Arab always on horseback.

We observe with pleasure the buoyancy of spirit with which our veteran brother closes his engagement with the gigantic foe.

> "He who shall determine correctly the pathology, and indicate with any certainty the cure of this disease, will wipe away a reproach to our art, and earn a reward as much more glorious than the oaken wreath awarded by the Roman senate to a soldier on saving an individual in battle, as the preservation of the lives of thousands, is to that of one, or the triumphs of science, compared with the solitary achievements of military intrepidity or prowess." (p. 95.)

*Asthma.* The chapter on asthma exhibits the desultory character of the author's mind, but contains many interesting observations. The disease is described by him as a bronchial spasm occasioned by irritation generally of the pneumogastric, sometimes of the spinal and ganglionic nerves often followed by congestion of the pulmonary tissues, and eventually by multiplied lesions of structure.

> "It were well (he adds,) had a closer attention been directed to the influence of spinal irritations in the production of the disease. Cases having unequivocally a location in the upper portion of the vertebral column, I have so repeatedly seen, that I am persuaded of its being a more common origin of it than heretofore suspected." (p. 135.)

Dr. Chapman gives some interesting illustrations of the well-known capriciousness of asthmatic attacks in regard to locality, in different individuals.

> "The pure air of the country, especially in elevated positions, I have found with very few exceptions, more pernicious than that of cities, and even the suburbs of these, less propitious than the central and populous parts. Many instances have come under my own view, of persons affected in this way, who, very comfortable in the latter, were rendered otherwise in the former situation, among which, is that of a friend of mine, who can seldom walk to the edge of the city with impunity, and never goes into the country without an attack. It sometimes happens, too, that individuals may spend the day comfortably in any rural position, though on the approach of evening, are unavoidably seized. Three or four instances of this kind I have known, and of which, there is now living in Baltimore, a gentleman by whom I am informed the fact is strikingly illustrated in himself. Close to the town, he owns a villa remarkable for its general healthiness, at which he has not slept for many years on this account, escaping however, all intimations of an attack during the day.
>
> "Moreover, positions nearly contiguous in the heart of a city, may vary widely in this respect, even the several stories of the same house. Each of these statements at least, is verified by one case which was the subject of my care. Called to visit a young lady from the south, having a violent paroxysm of the disease, I was told that she derived an immunity from it during a recent residence in Paris, by selecting a medium story in a hotel in a particular portion of that city, and that whenever she quitted the apartment, a paroxysm soon came on, from which she was speedily relieved on returning to it. Curious to make the experiment, I was seconded in the desire, by her own anxiety to change her lodgings, where she had severely suffered, and in a very short time she went to another house in the neighbourhood, in which she entirely escaped for several months. Compelled, however, to leave it, she fixed her abode at the distance of a hundred yards, in a street no less thickly built, and here, she had scarcely any exemption for weeks. On her moving into a different quarter of the city, I witnessed a complete verification of the statement she had made me. As long as she occupied the chamber on the second floor, she was almost nightly harassed by renewals of attacks, which were

presented by her sleeping in the room above. Even by dining below, her respiration was on several occasions seriously affected.

"In an individual whom I attended, the disease was twice brought on by sleeping in a room where a rose-bush in bloom was placed; in another, by a similar exposure to some pots of hyacinths; in three girls, by the emanations in the process of manufacturing cigars; and there was formerly a student in the University of Pennsylvania, who assured me that he could not weigh out a dose of ipecacuanha without being affected." (pp. 133-4.)

In the treatment of asthma, the professor has found the juice of the poke (phytolacca decandria,) serviceable, but he evinces a superstitious dread of lobelia, a remedy which in this country we have continually seen safely and usefully employed.

The following brief statement might form the text for a most valuable practical dissertation on the successful treatment of asthma. We are assured by long and extensive experience that the rational cure of many cases of asthma as well as of numerous other chronic diseases, is only to be found in the complete alteration of the patient's mode of life, and especially in the adoption of new habits of temperance, of regular and great bodily activity, and in the prosecution of that form of hygienic discipline commonly known by the name of "hardening." It is on this principle, in a considerable degree at least, that *hydropathy* proves beneficial in a certain proportion of cases.

"During the late war when the volunteers of Philadelphia were called out, and encamped several months, part of the time in winter, two individuals of my acquaintance, who previously had been dreadfully harassed by the disease, entirely escaped." (p. 148.)

*Angina pectoris.* The article on angina pectoris possesses considerable interest; for although containing little which will be novel to those who are conversant with the 'Cyclopædia of Practical Medicine,' or with the writings of Butter, Macqueen, Elsner, &c., still it is obvious that ignorance of much that has been written on the subject places Dr. Chapman in the position of an original observer, and thus adds force to opinions undesignedly corresponding with those of other writers. He considers the disease as "a species of neuralgia, commencing for the most part in the pneumogastric nerve, and spreading in different directions, as other nerves may become involved." He considers it probable that "the immediate cause of the irritation of the nerves, inducing the neuralgic condition, giving rise to the subsequent phenomena of the disease, is, in many instances at least, derived from irregular gout." (p. 158.)

In order to do justice to the professor's theory and practice, we will quote two of the cases which he has recorded: the first we would characterize as an example of a lucky hit; the second, we fear, is only valuable as a beacon to warn against the perilous shoals of the "wine-whey and ammonia" system.

"*Case* I. A distinguished member of the bar, aged 57 years, of slender form, and temperate habits, to whom I was called in the night during the winter of 1811. The moment I entered his chamber, I recognized all that sort of distress which characterizes this disease. He told me that he had for several years previously been subject to attacks of angina pectoris, for which he had been treated by Dr. Kuhn and Dr. Wistar. His pulse being active, with great agony in the region of the heart, he was bled copiously, and suspecting gout, though assured he was not liable to it, sinapisms were applied to the feet, and the carbonate of ammonia, with wine-whey, freely administered. In the course of a few hours, arthritic swelling seized on the knee-joint, with the occurrence of which all other uneasiness instantly subsided. By such a course of management, as will hereafter be detailed, he recovered his health, never having afterwards an attack either of angina pectoris or gout." (p. 159.)

"*Case* IV. In the spring of 1824, I was requested by Dr. Physick, to visit with him, a gentleman from the country, aged about 50, who informed us that for several years, he had been sorely afflicted by a complaint, considered by all the physicians whom he had consulted, as angina pectoris. The history given us of his case, embraced most of the prominent features of that affection. He told us that attacks of it were of very frequent occurrence, and brought on by the slightest causes, from one of which he was then suffering partially. As the ordinary practice had utterly failed, we determined to treat the case as irregular, misplaced gout, and with a view of drawing it to the extremities, employed the customary revellents, with carbonate of ammonia, and wine-whey. On the third day of our attendance, the gout became fully fixed in the elbow-joint, and in every other respect he felt perfectly well. Most unhappily, however, having omitted the remedies during the night, he arose in the morning to be shaved, and while the barber was occupied in that office, getting very angry with him on account of his awkwardness, he insisted on performing it himself, (as he had regained the use of his arm, from the cessation of the arthritic swelling.) But scarcely was the razor in his hand, when he complained of sickness of stomach, with excruciating pain in the left side, and sank lifeless on the floor." (p. 161.)

II. ABDOMINAL DISEASES. In the section devoted to abdominal diseases, the author exhibits a just appreciation of the great importance of the pathological relations of the digestive organs. To whatever disease, acute or chronic, he is called, he rarely omits to ask himself the question, what concern has the stomach with the case?

*Gastritis.* The description of gastritis evinces much accurate observation, and the treatment recommended is in most respects judicious, but we regret the absence of any sufficiently distinct description of a class of cases by no means unfrequent, in which gastritis is unaccompanied by its appropriate symptoms, in consequence of contemporaneous disturbance of the brain; which although only functional is too easily mistaken for cerebral inflammation. One of the most valuable means of diagnosis is the aggravation of the symptoms induced by the use of purgative medicines; but such aggravation, if overlooked, may prove speedily fatal. Some eminent French authorities attach little importance to the indications afforded by the tongue, Andral considering that there is no constant relation between its appearances and the states of the stomach, and Louis still more decidedly expressing a similar opinion. Our author considers such statements "precipitate and indiscriminate, partaking largely of the character of ultraism, which belongs to the school of Paris;" and in this sentiment we agree. We suspect that the failure of the tongue to be affected by important derangements of the stomach arises mainly from the interruption of ordinary sympathies in consequence of some overpowering impression on the nervous system. On this theory we can explain the fact, that yellow fever with an unaltered tongue is generally fatal; and can understand why we should regard a moist tongue with intense thirst, or a peculiarly dry tongue without thirst, as of evil omen.

In cases of *ulceration* of the stomach, Dr. Chapman has known a fatal result preceded by vomiting "of black blood or dark flocculose or granulated matter, to the amount even of eight gallons in three days."

*Cancer.* We can, from repeated observations, bear testimony to the truth of the assertion that cancer of the stomach may proceed "to a great extent without being betrayed by any very serious local suffering or constitutional depravation."

The quasi-epidemic prevalence of chronic, and even organic diseases has often been noticed, and most physicians of experience have had their attention called to the question by events in their own practice. The true bearings of such events are for the most part unknown: the occurrences are often, unquestionably, accidental. Dr. Chapman's attention has been called to the prevalence of cancerous affections in a similar point of view.

> "Not a little curious is it that the affection appears to be of wider prevalence at particular seasons, even to the observance in a degree of an epidemic character. During the month of April, 1832, I saw eight cases of it absolutely demonstrated by autopsic inspections, and such occasional occurrences, though not to an equal extent, have at other times been noticed by me, without any obvious reason for the phenomenon." (pp. 200-1.)

While commenting on the commonly admitted fact, that griefs and anxieties contribute to the development of cancer, Dr. Chapman adduces the case of Napoleon in evidence. He says that the harassments and exasperations to which he was exposed at St. Helena developed and envenomed the disease to which he fell a victim: "the records of time," he adds, "we shall in vain search for any similar instance of wanton and barbarous cruelty." Dr. Chapman might have ascertained that the symptoms of Napoleon's disease commenced as early as the Russian campaign in 1812; and had he known this, his readers would have had little to regret in the loss of some splendid specimens of maudlin sentimentalism and mock sublime, which disfigure this portion of the work. The occurrence of occasional inconsistencies of this kind in American writers betokens the still immatured literary taste of our transatlantic brethren.

*Dyspepsia.* After a description of the principal causes of dyspepsia, such as "deleterious drinks, gross animal food, and all the things included in the term dessert," we meet with the following sentence, which is too characteristic to be omitted. Our American friends are said to be very sensitive at being "shown up," at least by strangers: we hope, for the sake of our good doctor, that he lives beyond the region of tar and feathers. Our reason, however, for quoting the passage is the important truth it contains,—a truth, we admit, with shame and confusion of face, to be not altogether unexemplified, in a small way at least, on the soil of the "old country." As a general rule, however, we hope "our people" do find time "to pick their bones and chew their scrapings."

> "Detrimental as these articles may be, they are rendered still more so by the incongruous mixtures of them, several of the most discordant qualities being taken together, creative of all sorts of contentious movements in the stomach, a tumultuous uproar always ending in mischief, and above all by the rapidity with which they are swallowed. 'Bolting' is the term used to express the hurried manner of eating, in which it is said we excel every other people, and perhaps truly, owing in part to our eagerness to get on in whatever we undertake, and still more to the quantity our tables supply to be disposed of. As practised in Europe, our people cannot spare time to pick bones, and leisurely to chew the scrapings." (p. 212.)

Tobacco is denounced as a fertile source of dyspepsia; and we were delighted to meet in Dr. Chapman's pages with the following account of its deleterious effects. On this subject, an American physician may truly speak, *ex cathedra*. Although we cannot as yet pretend to compete with Americans in the practice of this disgusting vice, we see too much of it, not to know that, even in the small way here perpetrated, it is almost as injurious to the health of our young men as it is nauseous to the senses of their unsmoking victims. We almost wish they would, like Dr. Chapman's senator, come to "chewing and snuffing as well as smoking," that the full abomination of the thing might cure itself.

> "By a member of congress from the West, in the meridian of life, and of a very stout frame, I was some time since consulted; he told me that from having been one of the most healthy and fearless of men, he had become 'sick all over and as timid as a girl.' He could not even present a petition to congress, much less say a word concerning it, though he had long been a practising lawyer, and served much in legislative bodies. By any ordinary noise he was startled or thrown into tremulousness, and afraid to be alone at night. His appetite and digestion were gone, he had painful sensations at the pit of his stomach, and unrelenting constipated bowels. During the narrative of his sufferings his aspect approached the haggard wildness of mental distemperature. On inquiry I found that his consumption of tobacco was almost incredible by chewing, snuffing, and smoking. Being satisfied that all his misery arose from this poisonous weed, its use was discontinued, and in a few weeks he entirely recovered.
>
> "Distressing as was this case, I have seen others, from the same cause, even more deplorable. Two young men were in succession brought to me for advice, whom I found in a state of insanity, very much resembling delirium tremens. Each had chewed and smoked tobacco to excess, though perfectly temperate as regarded drink. The farther account given me was, that early in life, adopting this bad practice, it grew with their growth. Dyspepsia soon occurred, attended by great derangement of the nervous system, and ultimately the mania I have mentioned. But I have also seen the same condition very speedily induced." (pp. 214-15.)

The essential differences between inflammatory irritation and atonic dyspepsia are but indistinctly recognized, and the treatment is consequently discussed obscurely and inefficiently. Still we may fairly appropriate to the author the merit of having done better than others what few have done well. The treatment of this disease will continue to be an opprobium, until practitioners endeavour more carefully to distinguish between these varieties of the malady.

Dr. Chapman continually refers to gastric uneasiness, as though it were an essential symptom of dyspepsia; yet, every experienced practitioner must know that such is not the case. There is, at least, one distressing and not uncommon form of indigestion unattended with obvious uneasiness of stomach; the whole discomfort seeming as though dependent on the condition of the brain. The sufferer too well to be pitied, but too ill to be endured, can take scarcely any food without inducing an indescribable feeling of mental depression and inefficiency. We believe that, in such a condition medicines can accomplish little, and that the remedy is social cheerfulness and muscular exercise kept within the limit of pleasure. To such patients "vivite læti" is the great rule of health.

Dr. Chapman's experience leads him to believe that dyspepsia is occasionally induced by hemorrhoids:

> "Two cases from several more which I might adduce, may adequately illustrate this point. My attention was particularly called some time since to that of a middle-aged gentleman, who had suffered several years so severely from dys-

pepsia that even his life was deemed in jeopardy. The disease was exceedingly well marked. Learning that during the whole time, with scarcely an intermission, he had been annoyed with painful hemorrhoids, these were removed, and almost immediately he recovered his health.

"Even a worse case in a gentleman somewhat younger, subsequently came under my care. To great emaciation and hectic irritation was added a condition of stomach which almost precluded the retention of nourishment of any description. More or less of whatever was received, soon returned by a sort of spasmodic regurgitation. Every evening he became excessively oppressed, and was only relieved by vomiting of a very large quantity of a corrosive acid fluid; which on different occasions, being deposited on the grass of his lawn, this was as completely killed as if by salt and water poured on it. No course of treatment I could devise, proved of any essential service to him, till having ascertained that he had long been affected with piles, a circumstance previously concealed from me, they were extirpated and with the happiest effect." (pp. 216-7.)

*Gastrodynia.* In the treatment of this symptom of dyspepsia, milk is a favorite remedy with Dr. Chapman.

"Milk is sometimes very effectual. Two cases, especially, have come under my notice, in which its utility was remarkably displayed, the spasms being more speedily and effectually relieved by a copious draught of milk than by opiates or any other means. My friends, the late Mr. Dallas, secretary of the treasury, and the late General Williams, of the engineer corps, whom I attended for many years, I have again and again seen cured of this agonizing affection, in a moment, as it were, by swallowing a pint of milk. Not a few other instances could I relate where the remedy proved efficacious. (p. 229.)

It would appear, however, that this favorite remedy has sometimes its inconveniences, "especially when it accumulates in large masses of a cheesy nature, productive of gastric oppression, or unrelenting obstruction of the bowels with the alarming consequences of such conditions."

"Three very remarkable instances of the kind I have met with. Many years ago I had brought to me a mass, which, in length, breadth, lobulated structure, and general aspect, so closely resembled the pancreas that it might at a glance have been mistaken for that organ. On tearing off a part of the integument, which was a coating of coagulable lymph, I found the interior to consist of compact cheesy matter. As an explanation of the phenomenon, it was stated by Dr. Tydiman, my informer, that several months before, on a journey to South Carolina, his coachman, in whom it occurred, drinking copiously of milk, was soon after seized with colic, which though relieved, so many of the symptoms of hepatitis occurred that the case was treated under such an impression. By a violent effort of vomiting, the mass was brought up, convalescence commenced, and an entire recovery ultimately took place. The preparation is in the museum of the Pennsylvania University." (p. 241.)

Our author's pages supply us with many other examples of rather odd remedies. He has experienced in his own person great relief from sick headache by the use of lemon juice. Hard cider taken in the morning fasting is much employed in America for the same purpose.

"Constantly have we reports of the most discrepant sorts of nourishment agreeing with dyspeptics, partly to be referred to individual idiosyncrasies, though much more to the pathological state of the case. The late Professor Wistar informed me that he had for a long time ineffectually endeavoured to relieve an opulent merchant of this city, who was very speedily cured by drinking copiously of *sour beer*, such as had been utterly condemned by the brewers as spoilt and unsaleable. An eminent lawyer got well of a very inveterate attack, previously attended by the late Professors Rush and Physick, by living exclusively on raw turnips, and the latter was in the habit of relating another case where raw cabbage produced the same effect.

"During nearly a whole winter I had under my care, in consultation, a most distressing attack of the disease, proving utterly intractable to the regular remedies, which the next summer promptly disappeared by the person subsisting on the *morilla* or *sour pie cherry*. Nor is this the only instance of which I have heard of cures ascribed to tart, and perhaps unripe fruit of several kinds, and one especially from Professor Hodge, to apples.

"Not many years ago, I saw with Professor Jackson, a gentleman from North Carolina, who after baffling all our efforts, recovered on a diet of fat *roasted pork*; and a second with Dr. J. Rhea Barton, in an advanced stage of the affection, with a state of stomach so irritable that nothing we directed could be retained, which immediately yielded to *wheaten mush* and *vinegar* largely and eagerly consumed." (pp. 248-9.)

What "wheaten mush" may be, we really cannot say; and here as elsewhere we wish our worthy doctor had made use of language more generally intelligble.

Some interesting examples are given of pulmonary disease arising from disorder of the alimentary canal and other parts.

"In 1820, I was called into consultation with the late Dr. Monges, to a boy, who with most of the symptoms of the preceding case, particularly the copiousness of purulent expectoration, was so much reduced that the portions of the bones on which he rested, had protruded through the integuments in several places. Discovering that his abdomen was tumid, his tongue furred, his appetite capricious and depraved, and that he was subject occasionally to convulsions, I was led to expect the existence of worms, and under such an impression, anthelmintics were administered. In less than one week, sixty-eight lumbricoides were evacuated, and from that moment he became convalescent and rapidly got well.

"Many years ago, a case occurred in this city which attracted great attention. The son of one of our distinguished citizens, swallowing a pin, was soon seized with gastric irritation, followed by cough and other pulmonary affections. These gradually increased till purulent expectoration and hectic fever took place, leaving no doubt of confirmed phthisis and a fatal result. But, at this moment of despair, a small abscess arose in the groin, which, on being opened, the pin was found in it and extracted, it having travelled down through the cellular tissue to this point. Convalescence speedily ensued, ending in a perfect recovery. The subjects of these cases are all still living and in robust health." (pp. 236-7.)

*Diarrhea.* We have some interesting notices of this malady, part of which we shall extract.

"To chronic fluxes of the bowels certain sections of our country are singularly liable, especially Richmond in Virginia, and New Orleans. Cases of it I have annually from each of these cities, and am assured that it is one of the most terrible of their maladies. No age, sex, or condition of life is entirely exempt from it, though it rarely occurs before puberty. What occasions it is not ascertained; nothing peculiar about Richmond exists to which its production can be referred; but at New Orleans the popular notion connects it with the use of the turbid waters of the Mississippi.

"Diarrhea of a somewhat different kind appears to be hardly less frequent among our Eastern population, especially that of Boston, the source of which is as little intelligible. But the individuals whom I have attended with it, in their passage through this city to the South, all concurred in stating that the attacks were ushered in as dyspepsia, followed, after a long interval, by the bowel affection, then cough and other pectoral symptoms, marasmus, hectic fever, &c., imitative of phthisis pulmonalis." (p. 279.)

The remedies employed are bleeding, general or topical, if inflammation be present, blisters; subsequently ipecacuanha emetics, warm salt water baths, Dover's powder, with torrefied rhubarb, alum (a remedy in this country perhaps unduly neglected), with sulphate of iron, acetate of lead, mercury, nitromuriatic acid, nitric acid, with opium and camphor mixture, and sometimes diluted vinegar. In the subsequent periods, copaiba, creosote, cubebs, nux vomica. When there is much debility of the exhalents, astringents, such as galls, tannin, rhatany, and the dewberry root (rubus trivialis.)

"The physician-general of the British forces in Canada told Dr. Chapman 'that his wife having suffered from diarrhea for a long period, during which she had visited Europe, and received there the best medical advice without avail, was finally cured by living entirely on oranges, to which she was prompted by an urgent desire.' Yet, generally, fruits disagree, or prove as injurious as the common vegetables. Perhaps no article of food more uniformly agrees with the patient than buttermilk." (p. 291.)

*Constipation.* We have several interesting remarks on this symptom also.

"From ten drops of the radical tincture of colchicum, repeated several times in the twenty-four hours, and persisted in for some time, as much may be anticipated with a view merely to the restoration of the lost susceptibility of the bowels, as from anything else within my experience, rarely, indeed, having seen it to fail. It is essential, however, to its success, that the dose be small, and this is a precept to be observed in relation to all medicines in this form of constipation. The object being attained rather by gradual insinuation than by forcible impression." (p. 299.)

The laxatives from which Dr. Chapman has observed advantage are, extract of the butternut (juglans cinerea), the bile of the ox, brimstone with muriate of soda, and the sulphate of soda and magnesia in a considerable quantity of warm water, but his favorite remedy is the *peristaltic persuaders*:—℞ Rhei ʒj ; Ipecac. gr. x; Ol. carui. gr. x; Acacia q. s. Ft. pil. xx ; cap. ij o. n.

*Hepatitis.* Dr. Chapman agrees with Annesley in deprecating the indiscriminate use of mercury in this disease, and has constantly observed the failure of that remedy to "operate specifically in any disease during the suppurative process." He adduces various evidence of the efficacy of taraxacum, and after mentioning the frequent dependence of hepatic affections on conditions of the duodenum, suggests the probability that the abuse of mercury may induce hepatitis, an opinion supported by the statement of Dr. Somervail, (a most respectable physician of the south of Virginia, who has practised medicine for nearly half a century, in that section of the country,) that, till the introduction of mercury, a comparatively modern event there, into the treatment of autumnal diseases, "hepatitis was hardly known, and subsequently, it has most widely prevailed." (p. 327.)

Dr. Chapman considers that he was the first to suggest the frequent dependence of jaundice on irritation of the duodenum.

*Diseases of the spleen.* Dr. Chapman offers some interesting remarks on the subject of "engorgement of the spleen," a state characterized by painful distension in the left hypochondrium, dull or lancinating pains, precordial uneasiness, difficult respiration, wildness and distraction, and a full active or slow and irregular pulse.

"Twice I have witnessed it from an immersion in a common cold bath, and in one instance, by that of the yellow springs of this vicinity, the water of which is of an exceedingly low temperature. Not uncommonly does it proceed from the exhaustion of long exposures to our summer heat, and particularly among our labouring people. Extraordinary exertion of any kind, by running, leaping, &c. may induce it, and I once knew it to follow the fatigue of standing in one position for a length of time. But usually it is brought on more slowly, by the gradual operation of miasmata, and though sometimes under such circumstances it attains to a considerable height, it is mostly of less severity." (p. 378.)

The remedy is depletion, followed by the administration of quinine.

We suspect that the author has not paid any attention to the peculiar condition of the circulating fluid induced by Bright's disease of the kidney, and that in consequence he refers changes thus induced to the spleen and other organs. This fact may also probably serve to explain such passages as the following:

"The aspect is strikingly anemic, or of a deadly white, the tendency to hemorrhage, or serous effusions, or both, very great, and sometimes to a fearful extent. The hemorrhagic disposition is indeed so considerable that copious flows of blood take place from the most trivial injuries, as a slight cut, or scratch of a pin, or the bite of a leech, &c." (p. 380-1.)

"More than once I have seen jaundice an attendant on gastro-enteric epilepsy, particularly with the lurid hue, and often in chlorotic affections, the complexion exhibiting all the gradations of the usual colours, as well as a waxy whiteness called icterus albus." (p. 359.)

We have certainly known epilepsy to arise from sympathy with gastric or intestinal irritation; and, under such circumstances, have found it subside after the use of prussic acid, and other remedies adapted to this condition; but we strongly suspect that the state referred to in the passage we have quoted is one dependent on renal disease. We have witnessed several cases in which epilepsy was evidently thus induced, and we have even known it to prove fatal without leaving traces of disease in any organ but the kidneys.

Judging from the indications afforded by this volume, with the exception of too devoted an allegiance to the sanguinary school of Rush, we should regard Dr. Chapman as a safe practitioner. Indeed, the simple fact that so long an experience has not destroyed his faith in the efficacy of appropriate treatment, furnishes a presumptive evidence of his practical skill.

Although our notice of the work has extended to some length, we have not exhausted the materials of interest which it contains. We wish those materials were arranged to better advantage; but the particles of opinion, numerous as they are, have not crystallized into form. The doctrines require to be organized by some pervading principle, and the whole expression calls for reconstruction. The author, we suspect, possesses much practical sagacity and diligence, but he has been too sparing of the pains requisite to make the work serviceable to the student. We leave it to be imagined what must be the composition of a volume in which the sentences which we have quoted are among the least obscure. It is painful to observe in the lectures of a respectable and intelligent physician so deplorable a deficiency of classical expression.

The attempt to conceal the defect by the introduction of passages from distinguished writers serves but to aggravate by contrast. Could Horace see the society into which his charms are introduced he would keenly feel the aptness of one of his own similes as he recognized the dolphins sporting in the woods. It is indeed difficult to imagine how a writer could be apparently familiar with so elegant a poet as Horace and yet so utterly avoid all imitation of that poet's terseness.

We are not fastidious critics. We acknowledge the difficulty of uniting a literary taste with the ample stores of knowledge which modern science expects us to obtain, but it is in the power of every writer to make himself intelligible, and we wish we could impress Dr. Chapman with an adequate sense of the duty. If he will consent to make the effort, his work may be so changed as to become really useful to the young practitioner. At present it scarcely contains a perspicuous sentence, and at every page requires much preliminary knowledge to enable the reader to guess the meaning.

Let us advise the author not to "bolt" but to digest his observations, and not to commence a sentence without some idea of the thoughts which it is intended to convey.

Notwithstanding the strictures which we have found it necessary to offer, we take leave of our American brother with real respect. He evinces for the most part great anxiety for truth, and an ardent love of humanity; and it is obviously his aim, beyond the ordinary standard, to distinguish those shades of difference in diseased conditions on the study of which we must mainly depend in regulating the niceties of practice and promoting the improvement of our art.

## ART. III.

1. *Die Psychischen Krankheiten, und die damit verwandten Zustände in Bezug auf die Rechtspflege.* Von J. H. HOFFBAUER.—*Berlin*, 1844.

*On Mental Diseases, and their Legal Relations.* By J. H. HOFFBAUER. —*Berlin*, 1844. 8vo, pp. 266.

2. *A Treatise on the Medical Jurisprudence of Insanity.* By J. RAY, M.D., Superintendent of the Maine Insane Hospital. Second Edition, with Additions, &c.—*Boston*, 1844. 8vo, pp, 490.

3. *Remarks on the Impunity of certain attempts to Murder.* By T. MAYO, M.D. (*Medical Gazette*, 1843-4.)

THE first of these works is another of the numerous treatises on the medical jurisprudence of insanity, which of late years have issued from the German press. In his preface, the author states that his chief object is to remove the obscurity which has been thrown on the subject by the want of correct definitions and the improper application of the same term to very different states of the mind. He alludes to some errors of this kind in the well-known treatise of J. C. Hoffbauer, which has for many years been deservedly regarded as a standard work of forensic psychology.*

It is not our purpose to enter into those differences, which appear to us to be rather philological than medical. We apprehend that it is a matter of very little importance to English medical jurists, to determine the precise significations of the terms "*verstand*" and "*vernunft*," or the differences between "*wahnsinn*" and "*verrücktheit*;" and, practically speaking, we cannot perceive that the author of the present treatise has at all impugned the value in a medico-legal view of J. C. Hoffbauer's 'Psychologie.' With every desire to appreciate the labours of our German brethren in this department of science, it has always appeared to us, that they have been too prone to take up the metaphysical side of the question; and to leave those practical points, which are so deeply interesting to the medical jurist, in as much obscurity as ever. This fault exists, in our opinion, in the treatise before us. Thus discussions on the soul, free-will, and the "indivisible unity" of man are, in our judgment, quite misplaced in a medico-legal treatise. If the work of legislation were to begin anew, and legislators were willing to be instructed upon subjects, in relation to which they might with reason consider themselves to be as capable of forming a judgment as a professional man, there would be perhaps some ground for introducing such matters. But it is well known that medical witnesses are not required to show themselves versed in metaphysical speculations; and they are only likely to become confused by the introduction of them into medico-legal treatises on insanity.

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* Die Psychologie in ihren Hauptandwendungen auf die Rechtspflege, von J. C. Hoffbauer, 1823.

In treating the subject, Dr. J. H. Hoffbauer shows himself to be a strict adherent to system. There are some advantages in this, especially for reference; but it is a question, whether it is not carried to too great an extent. At the first view, his arrangement appears too artificial for practice. The same main divisions of the subject are adopted which are to be found in most modern treatises on insanity; but there are numerous subdivisions, the necessity for which is questionable. English writers have generally contented themselves with giving simply the *legal* relations of each form of insanity; but the author treats in distinct sections, the civil, criminal, and police relations of each of the forms; thus we have in their appropriate sections, the police-relations of melancholia and somnambulism!

The author contends that in disputed cases it should rest with the medical practitioner alone to aid the court in its judgment, (16;) but he requires that the witness should be qualified for this duty to a degree which would certainly render most medical witnesses incompetent. Thus he should be both "a theoretical and practical psychologist, and a man of knowledge and extensive experience." In criminal cases in this country, it is a common practice to require the opinion of the medical practitioner who happens to be summoned as a witness respecting the cause of death. Sometimes an individual "de circumstantibus," volunteers his evidence as a member of the medical profession; and this is received and acted upon, when in neither case may the medical witness have paid the least attention to the medico-legal relations of insanity. Although we cannot go to the extent indicated by our author, as to the qualifications of witnesses, we have no hesitation in condemning the loose and inconsistent practice often pursued in our own courts of law. We hope to see a better plan adopted; and that the selection of medical witnesses to testify to the state of mind of a criminal, will not be left as it now is, to mere accident or to an interested selection made by the solicitors for the prosecution and defence.

We consider it unnecessary to enter into any further analysis of this work. It is not adapted to English practitioners, and will probably only find readers among those of our countrymen who have specially devoted their attention to the medico-legal relations of insanity.

The first edition of Dr. Ray's work on the 'Medical Jurisprudence of Insanity' was reviewed in No. XIX of this Journal. We then had occasion to speak well of it, as embracing sound and practical views, and we see no reason to alter our opinion in respect to this edition. It is written in very clear and intelligible language, and is well fitted to serve as a manual for the medical jurist. The author we observe still retains Foderé's incorrect version of the case of Fish *v.* Palmer, (p. 58;) and we find that after having read the correct report of the case of Miss Bagster, to which in our former notice we referred him, he adopts the conclusion which we then ascribed to him by inference, that this young lady "was really imbecile to a degree requiring legal interference (p. 92.) In this particular case, the only two independent witnesses, Drs. Haslam and Morison, who were summoned by the commissioners, and not by the parties interested in the result, gave a strong opinion that this person was not insane, but that her incompetency to manage her affairs arose from her youth and ignorance! We cannot object to Dr. Ray entertaining a different opinion, but we do think it somewhat inconsistent, that he should at the same time censure what he calls "the habitual practice of Great Britain at the present day." "One finds it difficult to believe," he remarks, on "what slight grounds interdiction is there every day procured; a measure that with the ostensible purpose of protecting the interest of the insane party is too often in reality designed to promote the selfish views of relations and friends." (p. 462.) We believe that there are few modern cases to which these remarks can be applied with greater propriety than to that of Miss Bagster; but in respect to this case, and in opposition to the strong opinion of the only two medical witnesses examined at the inquisition, whose evidence could be supposed to be entirely free from bias, he has no hesitation in concluding "that the verdict was correct." (p. 92.) We think it would be difficult to adduce any modern instance in which interdiction was procured in England upon slighter grounds than existed here.

It cannot be disputed that the criminal law of England is loose and vacillating in respect to individuals charged with crime, and for whom insanity is pleaded in exculpation. We do not think the author overstates the case in relation to this question when he says:

> "If we carefully examine the cases tried within the last hundred years, as they are brought together in the various treatises on lunacy and on criminal law, the utmost respect for authority will not prevent us from observing the want of any definite principle as the ground of the difference of their results. Amid the mass of theoretical and discordant speculations on the psychological effects of insanity, and of crude and fanciful tests for detecting its presence, which these trials have elicited, the student who turns to them for the purpose of informing his mind on this branch of his profession will find himself completely disheartened and bewildered. Instead of inquiring into the effect produced by the peculiar delusions of the accused on his ordinary conduct and conversation, and especially of their connexion with the criminal act in question, the courts in these cases have been

contented with laying down metaphysical dogmas on the consciousness of right and wrong, of good and evil, and of the measure of understanding still possessed by the accused. One principle after another has been successively abandoned, and resumed either with the strongest disregard of consistency, or the most extraordinary ignorance of previous decisions Thus the old maxim that insanity does not annul criminal responsibility in one who retains the power of distinguishing right from wrong, was abandoned in the case of Hadfield, reaffirmed in that of Bellingham, again abandoned in the trial of Martin, subsequently modified by Lord Lyndhurst; and again in the year 1837, a jury holding in their hands the life of a fellow-man, are told by Mr. Justice Park, that as regards the effect of insanity on responsibility for crime, it is merely necessary that the party should have sufficient knowledge and reason to discriminate between right and wrong. (Greensmith's Case, No. xix, p. 144.) Three years afterwards, on the trial of Oxford for shooting at the Queen, Lord Denman told the jury that the question for them to decide was, whether the prisoner was labouring under that species of insanity which satisfied them that he was quite unaware of the nature, character, and consequences of the act he was committing; in other words, whether he was under the influence of a diseased mind, and was really unconscious, at the time he was committing the act, that it was a crime. On the trial of M'Naughten, for killing Mr. Drummond, in 1843, Lord Chief Justice Tindal instructed the jury that before convicting him they must be satisfied that, when committing the criminal act, he had not that competent use of his understanding as that he knew that he was doing a wicked and wrong thing—that he was sensible it was a violation of the law of God and man. Soon after the trial of M'Naughten, who was acquitted, the English House of Lords propounded certain questions, relative to the responsibility of the insane, to the judges of the law-courts; and their reply was meant, no doubt, to be considered as the law of the land, by which all future practice is to be regulated. They say that, to render the party irresponsible, 'it must be clearly proved that, at the time of committing the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or, if he did know it, that he did not know that he was doing what was wrong.' How this question is to be settled, and what is to be done with those cases where it is impossible to ascertain the views of the party, touching the moral quality of his acts, we are not told." (p. 48.)

We have quoted this passage because, in our opinion, it represents the actual state of the law of England. Many have been led to suppose that the answers returned by the judges placed this important question on a certain and well-defined basis; but substantially the answers left the question much as they found it, and judicial decisions hereafter are likely to be just as uncertain as they have hitherto been. (See No. XXXI, p. 273.)

We think Dr. Ray might have presented an analysis of the important cases of Oxford and M'Naughten in this edition. In our judgment, they would have been more interesting to the profession, both in America and England, than some which he has extracted from foreign works. The last chapter in the work, on Interdiction and Isolation, contains excellent practical remarks, with some additional matter. Indeed the whole subject is very judiciously treated, and we have no hesitation in recommending Dr. Ray's work to our readers as one of the most useful and practical on the medical jurisprudence of insanity.

Dr. Mayo's "remarks" are confined to the much agitated question of what should constitute irresponsibility in criminal cases, more especially in charges of murder. The author advocates a doctrine which, owing to the acquittals that have recently taken place on the alleged ground of insanity, for certain heinous crimes, is now becoming prevalent among those whose views are not obscured by the metaphysical speculations of German psychologists, namely, that there may be a degree of insanity in which punishment will operate as a preventive of crime, as much so as in respect to criminals who are undoubtedly sane. After stating that the insane are largely subject to fear, and that, in many instances, they are capable "of controlling, from prudential or other motives, their own tendencies;" he argues that "the power which, under the improved management of the present age, is so much employed for their benefit, and often for their cure, might, in these instances, be exhibited, in so far limiting their delusions, as to render them compatible with the peace of society." (p. 332.) At present we wait until they have committed some murderous act, and then inclose them in a madhouse for life. In this case, "the state of the alleged lunatic has all the attributes of a most bitter punishment, except those which tend to prevent the repetition of the offence by others. Soon, indeed, he is shut out from the thoughts and recollections of man, or if recollected by those who ought to profit by his sufferings, he is only recollected as one who has plenty to eat and drink and nothing to do." Thus, then, the psychological philanthropist, in carrying out his doctrine to an extreme degree, actually leads to the infliction of a severe punishment on the individual, but prevents it from having the least effect upon others as a public example! There can be but little doubt, that these doctrines are closely connected with capital punishment, and it is highly probable that, if this were abolished, nothing more would be heard of the plea of insanity in criminal cases.

Dr. Mayo appears to us to take a very sensible view of this question, in adopting, as he does, the maxim "in medio tutissimus ibis." He observes, in relation to the common legal test—of the individual being ignorant of the criminality of the act of murder at the time of its perpetration, that "the punishment of an insane person, whose insanity has proceeded to this point, can in no degree answer the intention of punishment. It cannot prevent a repetition of the offence, for it will not be appreciated by the persons whom it is supposed to influence." (p. 302.) This state would include those cases which depend on delirium, and it would embrace all such acts "as, springing out of an insane delusion, would be justifiable, if that delusive impression were founded in reality." A man, however, may know that his act is contrary to law, and be fully aware of its criminality; yet he may *not* be "one whose act the threat of punishment could have prevented in him, or the example of whose punishment could deter others similarly situated." This is a fact familiar to medical jurists. Dr. Mayo mentions, as a striking instance, that "Hadfield himself apparently shot at the king with a view to being capitally punished for it."

The author agrees with the late dictum of our judges, that the proof of partial insanity should not necessarily carry with it irresponsibility for crime. In this respect he differs from Georget and Prichard. In considering the "*justice*" of inflicting punishment upon monomaniacs, or upon those who labour under partial delusion, he contends, that "the person who can reason upon his crime, who can devise systematic means for accomplishing it, who can form and weigh opinions respecting his chances of escape, who can conduct the ordinary business of life, and can take care of his property, cannot, consistently with justice, be made less responsible morally (legally?) than the unhappy offspring of the prostitute or thief," who, after running through a career of vice and crime, is brought to the gallows. With respect to whether the punishment will act as "a *preventive*," he contends, and we think fairly, that "the burthen of disproof must rest with those who undertake to deny this supposition." One fact appears to us certain, that if such assassinations as that of Mr. Drummond were to become frequent in our public streets, and the evidence of insanity, adduced to shield the perpetrators, were no greater than it was in that case, the legislature would be compelled to try the effect of a severe punishment as a preventive; for the safety of society is not to be compromised or continually put in jeopardy, merely for the sake of carrying out certain psychological theories.

Dr. Mayo condemns the decision in M'Naughten's case, because, admitting he was a monomaniac, there was no proof, 1, that he was not cognizant of the nature of his act, in reference to the laws; and 2, allowing him every benefit for a preexistent delusion, he could not have construed the circumstances under which he performed the fatal act as affording grounds for it on the plea of self-defence under an *immediate* attack. Admitting that he had one set "of morbid associations of thought, he was not, therefore, incapable of learning or of teaching others by the example of his punishment; that a strong desire of vengeance, or if you please of prevention of mischief, must not be gratified in defiance of the laws of the country. To say that he was incapable of making these distinctions would be to assign to him a pathological state, of which no evidence was adduced. He must have been a maniac, not a monomaniac." (p. 304.)

It appears to us impossible to deny the correctness of this inference; and the view is so far confirmed by the late "dicta" of all the judges, that if consistently carried out, a case like that of M'Naughten is not likely hereafter to terminate in an acquittal. We shall presently adduce an instance in which the law has been thus rigorously enforced.

The author looks upon the entire escape of Oxford as confessedly most mischievous. Among those writers who are extreme advocates of "irresponsibility," we have never yet met with one who could, with any show of reason, justify, on psychological grounds, the acquittal of Oxford and the conviction of Francis. The result, in the latter instance, can only be referred to the fact, that our law authorities began to doubt the propriety of the lenient verdict in the former case. "I am not," observes Dr. Mayo, "advocating severity of punishment, but merely demanding that the consequence of offences against the community, committed by the insane, when the punishment, primâ facie awarded by law, appears unfit, as revolting to our sense of justice, may, in certain cases, assume to them the character of punishment in some form or other, and not be wasted as at present in unproductive suffering."

The practical questions, in Dr. Mayo's opinion, connected with the plea of insanity in criminal cases, are these: 1, Whether the insane offender is aware, at the time of commission, of the nature of his act in reference to law, if not, the plea should undoubtedly be admitted; and 2, Whether, though aware of the illegality and criminality of the act, he is in a condition to be withholden by that knowledge from the offence;

in which case the same ultimate grounds of exculpation should be admitted. "In each case, a state of *present* insanity *connected with the criminal act*, and rendering the threat of punishment inoperative, constitutes the plea in behalf of the offender. (p. 335.) We have some doubt how far it is correct to couple these reasonable conditions, with proof of the insanity being connected with the criminal act. Are we, as sane individuals, always in a position to be able to connect the delusions of the insane with their acts? The author objects to the practice of allowing medical witnesses to express an opinion, as to whether the accused is a "responsible or irresponsible agent." He contends with propriety that the medical evidence should be confined to the "pathology" of the case, to the condition of the man's mind, and that it has nothing to do with the question, whether the party be a "responsible or irresponsible agent." This is wholly beyond the province of the witnesses.

We have thus examined the opinions of Dr. Mayo, not merely because they are the most recent, but because they are reasonable, and have a direct practical bearing on this important subject. Since the case of M'Naughten, from thirty to forty trials for heinous offences have taken place in this country, in which the plea of irresponsibility has been raised. This shows that it is still a matter of deep importance to the English medical jurist. It is, however, a subject of regret to find that the complaint of Dr. Ray, of the vacillating character of our law, is fully borne out by the results. At one time, the legal standard of "right and wrong" is applied; at another, it is abandoned; in one case, the absence of motive is a ground of exculpation, at another it is not; in short, there is no consistency whatever. Some are acquitted, and others are executed, without our being able medically speaking, so far as this plea is concerned, to discern any marked difference in the cases.

It is not our purpose to prolong this article by a detail of cases, but still since the trial of M'Naughten, three of a remarkable kind have occurred and which are, therefore, deserving of a slight notice.

At the last Derby Winter Assizes, a young man named Grocock, was indicted for violating the person of a girl, aged 11 years, and also for attempting to murder her. The prisoner decoyed the girl to a solitary place under the pretence of giving her employment; he violated her person, then struck her repeatedly on the head with a hammer, and left her for dead. He then gave himself up to justice as a murderer, asked for pen, ink, and paper, and wrote down a minute account of the crime which he had committed, excepting the rape, stating in conclusion, "as regards my intention for committing such an act, I was determined to be transported or hung, having at that time no means of obtaining a livelihood, but I cannot properly explain the motive for committing such an action." In prison he was calm and quiet, when he did not know he was watched, but rolled his eyes strangely when he knew that he was observed. It did not appear that the prisoner thought the girl was a "conspirator" against him, but general evidence was adduced to show that he had previously complained "of feeling curious,—that his head was hot," and he felt as if he should go "beside himself." One witness thought him wild in his conversation and appearance, and it was proved that a near relative had been confined as a lunatic for eighteen years. There was no medical evidence of insanity, and the prisoner was convicted and sentenced to transportation for life.

If we try this case by the criteria of homicidal monomania, laid down by Georget and Prichard, it would appear that this criminal should have been acquitted. 1. There were peculiarities of conduct in the individual; weak, it is true, but still as strong as in Oxford and M'Naughten's cases. 2. The acts were without motive. 3. He sought no escape, delivered himself up to justice, and acknowledged his crime. 4. He had no accomplices. This case shows that such criteria are insufficient to establish a plea of irresponsibility, for no one can doubt that the prisoner was very properly convicted and punished.

Another remarkable case was tried at the Lewes Lent Assizes, 1844: The Queen *v.* Laurence: The prisoner had been arrested by a constable for a petty theft; he was taken to the police-station, where the inspector who was an utter stranger to him, was at the time engaged in talking to some friends, his back being turned to the prisoner. The man suddenly seized a poker and struck the inspector a violent blow on the skull, from which he speedily died. The prisoner admitted that he struck the blow, that he had no motive for the act, and that he would have struck any one else who had been standing there at the time. He also said he hoped the deceased would die, he was glad he had done it, and he wished to be hanged.

The evidence at the trial showed that there was no cause of quarrel between the parties, but that the prisoner appeared to be actuated by some sudden impulse, for which they could not give the slightest explanation. This man was left to a chance defence, for the Court was actually obliged out of common humanity to assign a counsel to him! There was no eloquent advocate to make a brilliant speech in his defence, no array of medical witnesses, versed in the subject of insanity, to contend for the existence of impulsive homicidal monomania, and thereon demand the man's acquittal as an "irresponsible agent;" but the defence was simply a cold formal plea of insanity, resting upon the fact of the deceased being a stranger to him, and there being consequently no motive for the act of murder. The jury negatived this plea, and the prisoner was convicted and executed.

We consider that this was one of those cases in which, in Dr. Mayo's view, an example may be properly made by punishment. The only points in which it substantially differs from M'Naughten's were these, that there was *less evidence of deliberation and stronger evidence of sudden impulse in the act;* and that there were no exertions used, in getting up the medical defence. Supposing that the party killed, had been some individual of high station in society, the probability is, that the result would have been different, and that Laurence would have now been spending his time with Oxford and M'Naughten. But it may be contended, this man was improperly convicted and punished. We do not think that this would be the general feeling of the public mind. Assassination attempted or perpetrated without apparent motive is now becoming too common; and, if it be alleged that the punishment of the perpetrators cannot act as a preventive, we are inclined to say with Dr. Mayo, that the proof of this rests with those who make the allegation. Every member of the social state has a right to have his life protected by the laws, and experience shows that punishment has a very powerful effect in restraining ill-disposed men from the crime of murder.

The recent case of Dalmas must be fresh in the minds of our readers. This man was convicted and sentenced to death for cutting the throat of a woman on Battersea bridge. Insanity was not pleaded, although the crime was not only committed without motive, but against all common human motives. The prisoner has been reprieved on account, it is said, of some doubt respecting the proof of his identity. This being, of course, a legal point, does not require consideration, further than admitting the existence of the doubt, the prisoner ought to be discharged as an innocent man. But before the reprieve, he was frequently visited and examined by two medical witnesses, whose report is said to have led to the suspension of the sentence, on the ground that the prisoner was insane. Admitting this assumption, although not the slightest proof of this condition was adduced at the trial, the prisoner resting his defence simply on the ground that he was not the party who committed the crime, (a very unusual plea, in cases of real homicidal monomania,) he should be confined as a lunatic ; but it is alleged that the sentence has been commuted to transportation for life. If this be carried out, it is hard to conceive how the question of insanity could be entertained. The results of these trials of Laurence and Dalmas appear to show that, in one case, where insanity is actually and with some plausibility pleaded, no pains are taken to make a searching inquiry into the justice of the plea ; but that where insanity is not pleaded, and the commission of the crime is wholly denied by the criminal, then an investigation is directed to be made by medical men into the state of the convict's mind. Such a mode of administering the law requires no comment.

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## ART. IV.

1. *Das Pest-Contagium in Egypten und seine Quelle, nebst einem Beitrage zum Absperr-systeme.* Von J. F. R. GROHMANN, Med. Dr. des Kaiserthums Oesterreich und Königreichs Sachsen, &c.—Wien, 1844.

*Plague-Contagion in Egypt and its source, with a Supplement on the Quarantine System.* By J. F. R. GROHMANN, M.D. of the Empire of Austria and Kingdom of Saxony, &c.—*Vienna,* 1844. 8vo, pp. 258.

*Risposta ai sette Quesiti concernenti la Peste bubonica orientale.* Del Dot. FRANCESCA GRASSI, Cavaliere di piu ordini, gia Medico-Chirurgo in capo dello Spedale generale della marina di guerra Egizia, &c. &c.—*Pistoia,* 1843.

*Answer to the Seven Questions concerning the Oriental Bubonic Plague.* By Dr. FRANCESCO GRASSI, Knight of several orders, Chief Medical Officer of the General Hospital of the Egyptian Navy, &c.—*Pistoia,* 1843. 8vo, pp. 78.

3. *Correspondence relative to the Contagion of Plague, and the Quarantine Regulations of Foreign Countries,* 1836-43. *Presented to the House of Commons in pursuance of the Addresses of the* 28*th August* 1841, *and* 15*th March* 1842.—*London,* folio, pp. 566.

THE appearance of the works just enumerated since the article on the same subject in our Thirty-second Number, has again drawn our attention to the consideration of contagion and quarantine with reference to the propagation of plague. They do not contain much matter of novel interest, yet, as there are several points of importance elucidated by some of the correspondence, and it is stated that the Committee of Privy Council for Trade have at length determined upon opening the question for general consideration, we shall present to our readers the information contained in these works which may be considered as supplementary to our former article.

The work of Dr. Grohmann is written with the view of impressing upon the Austrian government the importance of regulating their quarantine laws upon a secure basis, on the grounds that the plague has a local origin, that it may be circumscribed in its original seat, that the period of quarantine at present pursued is too long, and that the contagious principle may be destroyed by a temperature of 50° to 60° Reaumur. There is nothing new in all this, nor in the reasons which the author gives as his motives for writing. He says he writes, in the first place, because the doctrine of contagion has been lately shaken, particularly by French physicians, whereas their opinions are contradicted by thousands of facts; and secondly, because he has peculiar views upon the epidemic and miasmatic origin of plague, and upon its mode of propagation. He states that he lived for several years and at various periods in the East, partly in Egypt, partly in Macedonia, Thessalia, Wallachia, and some time in Constantinople. During this time, he not only took a most active share in the malignant epidemic which prevailed in Bucharest in 1813, but also met with repeated cases of the sporadic form. The first part of the work consists of an inquiry into the first origin of plague, and whether it be epidemic or miasmatic; in other words, whether it arise from simple meteorological changes in the constitution of the atmosphere or from vegetable or animal emanations, which may be conveyed into the system through its means. The author gives a very fair account of the general causes of disease in Egypt, remarking particularly upon the perpendicularity of the sun's rays, the flux and reflux of the Nile, the emanations of a rich vegetable kingdom, and the South wind. It is interesting and well written, but contains nothing worthy of extract. We have then a section on the climate and condition of Egypt, with regard particularly to the development of plague; but this is so purely speculative as to have little value, the author repeatedly satisfying himself by the employment of certain forms of words which, when analysed, express nothing, where a frank confession of ignorance, or some plain statement of fact, would be far more likely to lead to a knowledge of the truth. He continues his inquiry, first, into the existence of contagion in Egypt, and after roaming through the beaten track of the arguments of the contagionists and their opponents, gives a description of the disease in its different forms, hemorrhagic, petechial, carbuncular, and bubonic, but without throwing any new light upon the subject. He comes to the conclusion that every one else has done, that further inquiry in Egypt is necessary, and passes on to treat of the independence of the origin of the plague of epidemic or miasmatic agency in a long chapter of fifty pages, thoroughly German in the latitude given to theoretical points of dispute, and, to a person acquainted with previous writings on plague, lamentably deficient in novelty or interest. The sum of the whole is that something more than mere epidemic or miasmatic influence is required to produce the specific disease called plague. Another speculative chapter follows on the primary origin of contagion, whether the primordial seeds of contagion are still in operation, or whether new sources are in existence. His conclusion is that the causes are entirely local and closely connected with domestic life and the customs of society. After an appendix in which the author attempts to settle a dispute between Drs. Pezzoni, Oppenheim and Simon, he treats on the means of defence from plague, and in the very commencement of this chapter enters upon a subject which we were the first to open for consideration in our former article—the possibility of a radical extirpation of plague. We shall presently resume this topic. After some remarks on the different means employed in the treatment of plague, Dr. Grohmann enters upon the subject of quarantine regulations. He considers that experience has sufficiently proved their utility in general, but that in detail they are open to serious objections; that while the ingress of plague to healthy countries is sufficiently guarded against, the precautions against its egress from the east are insufficient, but he proposes no means of remedying this defect. He considers the period of quarantine at present pursued too long, but does not define what should be its true limits, although he seems to think five days the extreme period of latency of the disease.

We have gone through this work carefully in the hope of finding some continued passage of sufficient interest for extract, but without success. The book is by no means a bad one, as it gives a very fair account of what is known in the departments of the subject under discussion, but the author does not appear to have clear or defined ideas upon any point, or, to say the least, he fails to convey them to the reader. He constantly enlarges upon purely speculative doctrines, and as often allows their practical bearing to escape him, satisfying himself rather with pointing out errors and abuses, than in devising means for rectifying them. We therefore turn to the Parliamentary Report which consists of correspondence between the Foreign office and our consuls abroad, or with other governments, with regard to the details of quarantine regulations, and a long appendix on the doctrine of contagion. Owing to a proposition which had been made to government with regard to a medical commission in the Levant, to determine the question of contagion, Sir W. Pym was consulted, and he recommended that instead of sending medical men, a circular letter should be addressed to our consuls at Constantinople, Smyrna, Aleppo, &c., requesting them to obtain the opinions of the most eminent medical men in their places of residence. This was accordingly done, and seven questions proposed by Mr. Lewis were sent from the Foreign office as proposed. The following are the seven questions:

1. Is plague communicated by contagion?
2. Is plague communicated by contagion alone, or by other means also; and if so, by what means?
3. Is actual contact with an infected person necessary for communicating plague, or will a close approach to such person communicate the disease?
4. Can substances which have been in contact with an infected person communicate the plague; and if so, what substances?

5. How long may the infection of plague remain dormant in an infected person before it declares itself by evident symptoms?

6. How long will the contagious matter of plague, when lodged in inanimate substances, retain its infecting power?

7. What are the means by which substances containing the contagious matter of plague may be purified?

These questions were submitted to the Royal Society of Medicine in Marseilles, the Board of Health in Alexandria, and to various English, French, and Italian physicians resident in Egypt, Syria, and Turkey. The pamphlet of Dr. Grassi consists of his answers to these questions, with a supplementary address to men of science, entreating them to use their influence in establishing an effectual system first for limiting the extension of the plague, and then to concert measures for its eradication. The answers of Dr. Grassi are exceedingly creditable to him. He has had opportunities superior perhaps to those of any other man for prosecuting his inquiries, and has employed them to the best advantage. He writes in a very clear style, always seizes upon the real point at issue, and bases his arguments upon facts, which are clearly stated and proved by official records to be authentic.

We entered at some length in our former article upon the principal points embraced by the seven questions given above, and our stated opinions are in every respect confirmed by the works at present under notice. We need not therefore recapitulate them, but shall shortly give a few of the most important facts bearing upon the disputed questions. First, the very important evidence of the contagious nature of plague from the results of segregation is furnished by Dr. Grassi. He states, that during the plague in Alexandria in 1834, the squadron of 16,000 persons remained perfectly well, and this not on account of removal from the seat of infection, because other ships in the same situation which had communication with the shore lost many persons. The arsenal, with 6000 labourers, was situated close to the infected quarters, but kept in strict quarantine. During six to seven months, 5 or 6 cases of sudden death occurred, but no decided case of plague. The marine hospital, although surrounded by three villages which were completely deserted from the effects of plague, "remained healthy during the long time that the plague lasted, only because a strict quarantine was maintained within its limits. The contrary took place at the land hospital." (Parliamentary Report, p. 448.) The land hospital was very favorably situated, but the physician was a non-contagionist, did not adopt precautionary measures, and the disease "carried off many victims and subjected the government to great sacrifices." (ib. p. 448.) During this plague the college with its hospital, the populous harem of the viceroy, other inferior establishments, and numerous private families who *shut up*, escaped entirely; while of the Turks, who took no such precautions, it is said, "when the malady declined, more than 100 keys were found at the police office, of houses where the inhabitants had all perished." Dr. Grassi adds, "In the short period of two months I saw fifty-seven dead bodies brought out of the house of a Turk, the treasurer-general of the navy." (ib. p. 448.) Dr. Gaetani Bey gives the numbers of those who were segregated during this pestilence, stating, "that in 32,525 individuals isolated in quarantine, not one case of plague has been proved." (ib. p. 514.) In the answers of Dr. Floquin we find another fact strikingly exemplifying the effects of the segregation of the European population in eastern cities. He says the Turks take no precaution by isolation or quarantine, and "during the plague of 1837, 8 to 10,000 persons died in Smyrna of a population of 40,000 Mussulmen, while scarcely 1000 died of a population of 55,000 Christians." (Report, p. 420.) Dr. M'Carthy states, "I have known an instance of every individual in a harem being carried off successively, although there was not at the time a trace of the disease in the neighbourhood, or in other districts of the capital." (Report, p. 421.) Dr. Grassi gives a table which shows that from 1831 to 1837, "the plague has ten times reached the port of Alexandria from without; that it has been eight times combated and subdued in the Lazaretto; and that in the two instances in which it penetrated into Egypt, the cause was the non-adoption of similar regulations." (Report, p. 461.) Surely further evidence is not required to settle this question.

With regard to communication of plague by *actual contact* alone, we have before expressed our opinion, that it is contrary to reason and experience to suppose that a mere cuticular contact could be dangerous, while the inhalation of the concentrated emanations from a plague patient were innocuous, although it appeared that *close approach* was necessary as a certain dilution of atmospheric air appears to render such emanations harmless. This view is strongly supported by Dr. Laidlaw, who says, "In private houses where ventilation is good, the disease, as a general rule, is confined to one individual alone; wherever a number of persons are assembled in a confined atmosphere, and no attention is paid to ventilation, and the disease appears, every one is cut off." (Report, p. 494.) This is almost the only point at which we are opposed to Dr. Grassi. He supports the doctrine of actual contact, and during plague, in common with other physicians attached to plague hospitals, goes about the city attending other patients, taking the sole precaution of not touching those affected with plague. We are convinced from conversations with several physicians that this freedom of visiting in the cities is one reason which gives a great bias to their minds in support of the belief in contagion by contact alone. If they admitted the possibility of receiving the disease from being in the same room with a patient, it would be necessary that all physicians of plague hospitals should be put in quarantine with their patients. This would be a great inconvenience and pecuniary loss to them, but we maintain that it is a measure absolutely necessary for the public safety, and one which must sooner or later be carried into effect, as it is well known that when plague has been imported into a town, its next attacks are in a great majority of cases in the houses of medical men.

With regard to contagion by clothes or articles of merchandise, Dr. M'Carthy relates a fact which supports the belief that articles of clothing *which have not been exposed to air*, are capable of communicating the plague. "An Armenian banker quitted precipitately his country seat on the Bosphorus, (it was in July) in consequence of an accident of plague among the domestics. Everything was tolerably well purified in the usual manner, with the exception of a couple of trunks, containing fur, shawls and other valuables, in order not to expose them in the absence of the family to the rude manipulations of those rapacious hirelings who gain a livelihood by the luckless service of disinfection. The matter was thus overlooked till the following spring, when the proprietor, wishing again to occupy his summer residence, commissioned some trust-worthy servants to open the trunks with precaution and air the contents; two of the number were attacked and died of plague, though at the same time the public health was unexceptionable." (Report, p. 423.)

We have found no fresh evidence in the works before us showing the length of the period during which plague can remain *latent* in the system, nor anything of value towards determining the time during which inanimate substances retain their infecting power. A commission of Russian physicians has been lately experimenting on this latter question in the Levant. The results of their experiments are not perfectly satisfactory, but they still show that exposure for a short time to a moderate degree of heat, or for a somewhat longer time to a free current of atmospheric air, completely destroys all infecting power, even in the bed-linen of plague patients.

Before leaving this part of the subject, we may mention a remarkable fact which is recorded by Dr. Andreyessky, chief surgeon of the staff at Odessa, showing the possibility of the coexistence of plague with other poisons. He says, "we have seen a pestilential bubo by the side of a venereal bubo, but each occupied the place that was appropriate to it. The two infections had been communicated by a husband to his wife, who, as well as he, had incontestible signs of both diseases. (Report, p. 151.)

We shall now pursue the consideration of quarantine laws. We have spoken of the result of sanitary regulations in countries where the plague only rages after its introduction from other places. Still more important and interesting facts are gathered from observing the effects of those regulations in countries where the plague is supposed to be indigenous. During the last six years, interior quarantines and sanitary police have so far banished plague from Turkey, that the belief has become general in the Levant, that in Egypt alone does the disease originate. Mr. Consul Sandison, writing in 1842, says, "I can recollect no former period during which there has been such a cessation or diminution of the plague throughout the whole extent of the Turkish territory, as since the establishment of quarantines, imperfectly as they have been hitherto regulated." (Report, p. 355.) Experience to the present day has confirmed this; and surely this appears a great boon conferred by the medical profession upon a people, when we remember that in 1812, 3000 daily died in Constantinople alone, and 1500 daily in 1834 and 1836; and in Smyrna between 30,000 and 40,000 (one third of the entire population,) were swept off. Since 1841, very judicious arrangements have been carried on in Alexandria, with the view of separating every case of plague as it arises. (See Parliamentary Report, pp. 401-5.) They met with considerable opposition, but their effects have been hitherto most satisfactory, although some time must elapse before they can be perfectly followed up. One great objection to the establishment of sanitary regulations in Turkey, was the Mahomedan doctrine of predestination. A very interesting dispatch from Lord Ponsonby, inclosing an extract from the Turkish Gazette, of May 1838, shows how the conscientious scruples of these peculiar people were combated. (Report, pp. 276 8.) The arguments are exceedingly well arranged, to the effect that although the accomplishment of the decrees of Providence cannot be prevented by human power, still it is unreasonable not to employ the means which the same Providence has placed in our power for the purpose of self-preservation. As it is necessary that a man eat and drink, to prevent his dying of hunger or thirst, so must he employ remedies to prevent his death from disease. Mahomed himself said, "fly lepers as you would fly from a lion." The plague is a contagious disease, like leprosy, and therefore it is as lawful to flee from one contagion as from another, and take proper precautionary measures, firmly believing at the same time that the plague is only communicated when God permits it. These arguments have been supported by clerical authority, and have done much towards ameliorating the condition of the Turks, sunk as they were under the lethargic influence of an omnipotent fatalism.

This brings us to a question which is daily becoming of greater moment —the possibility of eradicating or totally destroying the plague. We advanced arguments in our last article in support of this belief, from the fact that whole countries formerly subject to yearly visitations of plague have, since the establishment of sanitary laws, been kept entirely free from this scourge. Time has added additional strength to this argument, no new cases of plague having appeared in those countries. Both Dr. Grohmann and Dr. Grassi support this view, though it appears to have escaped the attention of other writers. The former argues that the extirpation of the contagious exanthemata, measles, and scarlatina, and smallpox, notwithstanding the influence of vaccination, is impossible, not only from our ignorance of their original sources, but also from the universality of their extension over the whole globe. But the plague, on the contrary, has a limited seat of origin; it is possible to follow its comparatively limited progress; its native country can be pointed out; even the spot of its generation can be settled without difficulty, and in all probability can be inclosed within very narrow limits. In Dr. Grassi's address to scientific men, at the conclusion of his pamphlet, (pp. 77-8,) he says:

> "I also acknowledge the possibility of one day arriving at the point of being able to abolish quarantines and pull down lazarettoes; but not by the means pointed out by the anti-contagionists. If it be desired to attain this end, I will point out the path. The plague being susceptible of being destroyed, and erased from the number of human diseases, it is necessary to aim at this intent (tendere a questo scopo). The plague was found formerly disseminated through all Europe; it was gradually confined to the East, and now its dominion is greatly restricted, because Greece and European Turkey have been liberated. Let the sovereigns of the West, who have such an influence over those of the East, exercise it for this sacred object. Let them assist, and even afford the means which may be necessary. This would be a sacred war, a legitimate intervention, a philanthropic expedition. This would be a great progress for the good of humanity, commerce, and industry. Let it not be believed that this is a work impossssible or difficult. The fanaticism of certain people, who are not yet arrived at the degree of intelligence to be able to discern their own good, would be the chief obstacle. If this, however, could not be overcome by persuasion, it might by force.
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> "If, on the contrary, we commence where we ought to finish—that is, with a relaxation of precautionary measures, of the prophylactic laws—the oriental plague will shortly introduce itself into Europe, and then all will be lost.
>
> "But who will plead the cause of humanity—make it reach even the throne, and induce the rulers to unite themselves in this sacred alliance? It rests with you, O men of science, who justly enjoy unlimited reputation. You only can be

listened to by those who, constituted by Divine Providence heads of kingdoms and monarchies, direct the destinies of the people. Unite yourselves, then, in venerable congress; take into consideration my proposal, dictated by experience and the practice of many years. Paralyse the efforts of innovators, who impudently labour, under the cloak of public good, to recall the already exiled scourge into the breast of Europe; and determine sovereigns to cooperate, so that the eastern monster may be hunted and pursued to extinction in its present insecure retreat." (Risposta, pp. 77-8.)

Allowing for a little Italian imagery and warmth, these are the very arguments advanced by us last year; and we have great pleasure in giving them the support of a physician intimately acquainted, from long residence and official station, with the affairs and conditions of Egypt.

Neither of the writers before us propose any definite measures for obtaining the desired extirpation; we shall therefore offer one or two suggestions. We have found, from repeated and minute inquiries, instituted partly by ourselves, partly at our suggestion through quarantine authorities, that all the sporadic cases of plague occurring in Egypt within the last four or five years, have been observed in certain villages of the Delta. When the plague has been brought into Alexandria, it has always been traced to these villages. It has therefore been an object to determine if these districts were subject to any terrestrial emanations, or if the seeds of contagion were perpetually preserved by any habits or customs of the people. Hitherto we have obtained no conclusive evidence on this question, but there are reasons for inclining to the latter opinion. The inhabitants have a religious or superstitious objection against burying their dead, where they can be reached by water. Now these districts are annually overflowed by the Nile; and the people accordingly preserve their dead above ground, in receptacles which are nothing more or less than a cottage with one door and no windows. In these places the dead are laid, as an Egyptian expressed himself to us, "like herrings in a barrel." Very soon after the death of a person, he is brought with his clothes on, the door is opened, and the corpse laid upon the others, until the place is full. The door is then built up, and another dead-house constructed. The condition of these places varies, according to the time of year and amount of moisture. At times the putrefactive odour is most disgusting; at other times, by the intense heat and dryness of the atmosphere, the bodies were as it were mummied. We have been hitherto unable to prosecute this inquiry further, but hope to be able to do so upon the spot itself, as, *à priori*, we have here a very probable means of keeping up a constant supply of contagion. Clot Bey certainly attaches very little importance to the danger that can arise from the *mephitis* of putrefying corpses. This, however, is not exactly the question. We have seen that they do not always putrefy, and therefore the poison may not be decomposed. And, further, allowing that the dead body some short time after death, may not be capable of propagating contagion, still the clothes and various articles about the person, inclosed as they are soon after death in confined situations, without exposure to air, are just what experience has shown to be active instruments of contagion. We are not inclined to speculate further upon a question which may be settled by the test of experience. If the sporadic causes observed in these villages be traced to contagion from burial-places, means must be taken for destroying these receptacles, and introducing a new mode of sepulture, either by persuasion or force.

It is well known that inoculation with the matter of plague sores has been tried, and with such results as might be expected. It seems also to have been thought that a preventive, as vaccination is of variola, might be discovered. In Dr. Grohmann's work, we find the following quotation from the 'Praxeos Medicæ' of Frank: "Vaccine has been discovered to be a certain antidote against variola—why then cannot an antidote against the plague be found? An epidemic carbuncle is known among the inhabitants of Hungary, and vulgarly called pokolvar. It appears to be the effect of murrain in oxen. Has this analogy with the plague in mankind? Luminosa idea (bright idea!) for if the variola of cows can avert human variola, it is at least worthy of experiment to determine whether the bovine carbuncle transferred to man preserves him from the plague." (Grohmann, p. 212.) We give the quotation as we find it, and, knowing nothing more on the subject, can only hope to see the experiment tried.

Let us now see how the present quarantine laws may be modified upon our *present* knowledge of the natural history of the plague. Our proposition is simply this—do away with quarantine altogether from all places where plague is not actually present, and reduce it to fifteen days for ships coming from parts actually infected at the time of the departure of the vessel. This is almost equivalent to a total abolition of quarantine, as a few Egyptian ports are the only places now affected with any frequency: the united experience of 200 years has proved that it might be done with perfect safety. Why should Morocco and the Barbary States, where plague is never engendered, be debarred from the benefits of free commerce? Algiers enjoys free pratique, and is in free communication with Tunis and Tripoli on the one side, and with Morocco on the other; yet a vessel from either of the latter parts has nine or fifteen days' quarantine, while from Algiers all are in free pratique. Mr. Villiers, our late minister at Madrid, in advocating free communication between Spain and Morocco, says, "By land the States of Morocco have never been invaded by contagion but once, in ancient times. Every description of geographical and physical barrier is opposed to the propagation of disease in that direction; and now that the civilized regulations of the French in Algiers are established between Morocco and the Levant, it is less probable than ever that the public health of this empire (Spain) should be disturbed from that quarter." (Report, p. 206.) Another absurd inconsistency in the present regulations must be noticed. Athens is placed in quarantine as a suspected port; the Ionian Islands are in free pratique, and still have free communication with Athens. So that two ships leave Athens on the same day; one comes direct to Malta or Marseilles, and has seven days' quarantine; the other stops half an hour at Cerigo, sends a boat ashore for a bill of health, and goes to any Mediterranean port without a day's quarantine. We might continue the enumeration of such examples of inconsistent and vexatious impediments to commerce and civilization, and the list might be indefinitely extended if we took up the subject of articles of merchandise, &c. which are considered some as susceptible, and some as non-susceptible of conveying contagion. We shall content ourselves with one example. In company with several naval officers, an officer of the 97th regiment, and another of the artillery stationed at Corfu, we lately made a short excursion in Albania. It was necessary to take a guardiano from the Lazaretto to see that none of us touched any of the Albanians, they being in quarantine. We had a letter of introduction to the Bey of Butrinto, and the old gentleman complimented us by offering his pipe from his own mouth. It had a large amber mouth-piece, and being non-susceptible, it was passed round the whole party with the permission of the guardiano. This fact speaks for itself. The regulations we have just proposed would do away with all such inconsistencies, and establish a uniform and equable system throughout the Mediterranean ports. The experience of 200 years is a guarantee for the security of the measure, supported by all authenticated knowledge of the natural history of plague. How then are we to proceed to secure its adoption? The effect of a conference of European powers appears doubtful. Prince Metternich, who entertains very enlightened views on the subject, endeavoured to obtain a conference of delegates from different governments for the purpose of arranging some uniform system. A great deal of correspondence followed, but we only learn the result incidentally in a letter from our consul at Trieste. He writes that Prince Metternich told him that the project of a congress "went off in consequence of a difference of opinion as to the *place of meeting*." (Report, p. 31.) So much for the etiquette of diplomacy. A committee of medical men, judging from past experience, would probably be productive of no better result. It is painful to see how the conflicting opinions given by medical men on the subject of contagion, often from want of information, perhaps still more often from want of reflection, and occasionally, it is to be feared, from petty professional rivalry, have shaken their credit with legislative persons. Count Molé writes with regard to the meeting of delegates, "There are assuredly points on which we should ultimately agree, without entering into medical discussions, which appear to be scarcely susceptible of solution. Sanitary dispositions have no real sanction but that of experience." (Report, p. 16.)

To the press then, as the great instrument for the correction of public abuses, we are obliged to turn, and we have accordingly done the little that lay in our power towards impressing upon those in authority the necessity of basing their regulations upon reason and experience, rather than upon superstition and custom. We have reason to know that our efforts have not been altogether without effect, and it now only remains for a proper system to be authoritatively proposed, to meet with the general consent of the sanitary bodies of the Mediterranean. It is not through the usual diplomatic channels that the object can be obtained. The different boards of health are very little under government control. They enjoy a sort of municipal privilege accorded by general consent of the inhabitants of certain districts, or their representatives, and strengthened by royal charter; and it is through these boards, and not by mere government enactments, that any great or beneficial alteration can be effected in the quarantine laws. We know that the spirit of the whole sanitary body is in favour of a moderate and uniform system, and that the one we have proposed would be supported by the great majority of its members. Its effect would be almost equivalent, as we have shown, to an abolition of quarantine, while the necessity for quarantine officers would still remain. The ships under observation would be much more securely guarded than is at present possible, and the self-interest of lazaretto officers not being interfered with, one great obstacle to former proposed arrangements would be removed.

We confess we should be glad to see this question advocated by Sir William Burnett. His station at the head of the medical department of the navy renders him the natural medical referee of government on all questions connected with our maritime communications; his acknowledged high character and the interest he has already displayed on the subject would combine to ensure a certainty of success to any measure brought forward by him based upon science and truth.

With our present knowledge the necessary means of protection may be reduced to a uniform system, offering few and slight impediments to commerce and civilization, and affording time for prosecuting still further our inquiries into the origin of plague. We may then hope to thoroughly destroy the poison, remove altogether all restrictions to international communication, and emancipate the world from one of its most fearful scourges.

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## ART. V.

*Traité d'Hygiène publique et privée.* Par MICHEL LÉVY, Médecin ordinaire de premier classe, &c. &c. Tome Premier.—*Paris*, 1844.

*A Treatise on Hygiene, public and private.* By M. LÉVY, Physician to the Forces, Professor of Hygiene and of Forensic Medicine, &c. &c. Volume the First.—*Paris*, 1844. 8vo, pp. 602.

HYGIENE is important in all its aspects, whether we consider it theoretically, as the final cause of the medical sciences, or practically, as applying the latter to the greatest possible utility. Our sense of its value has been sufficiently expressed by our frequent consideration of the science in general, and of its numerous subdivisions. The works of Virey, Du Chatelet, and Motard on public and general hygiene, and of Dunglison and Kilgour on private hygiene, were reviewed in vols. I, V, and XIV of our Journal. The preservation of health, a special division of the subject has been considered by several modern writers, all of whose works we have noticed more or less at length: amongst these may be enumerated Dr. Southwood Smith, Dr. Andrew Combe, Dr. Hodgkin, Mr. Mayo, and Dr. James Johnson. Dietetics and the physiology of digestion, with reference to diet, have also had their due share of our consideration as a special division of private hygiene. In vols. I, V, and XVII will be found reviews of the works of Doctors Paris, A. Combe, Robertson, Pereira, Davidson, and Truman. The hygiene of infancy, (vol. X), of young females (vol. V), of intermarriage (vol. VII), of religion and mental culture (vols. III, IV, XVI), and other minor questions of this kind have not been neglected by us. The influence of every climate and region has been specially elucidated by the elaborate statistics of the army and navy of the empire, which Major Tulloch and Dr. Wilson have reduced from government reports. Ample notices of these unique climateric data will be found in vols. VIII, IX, XI, XV of our Journal. In addition to these we have noticed (vol. XI) similar military statistics of the climate of Senegal, by M. Thevenot, surgeon in the French navy; of Sierra Leone, by Mr. Boyle, colonial surgeon in Sierra Leone; and of the climate of the United States by Dr. Forry (vol. XVI.) The interesting inaugural dissertation of Dr. Thompson (vide vol. VI) belongs also to this head. We discussed at length (vol. XIII) the works of Drs. J. Johnson, Annesley, and other writers on the diseases of India; nor have overlooked the climateric fevers, as is proved by our reviews of the works of Maillot, Kremers, Manni, Evans, Smith, &c. in vols. IV, VIII and XII. Our notice (in vol. XIV) of Dr. Shapter's admirable essay on the 'Climate of the South of Devon' will serve to show that we have not neglected home products. Nor must we omit to notice in our enumeration of works treating of this branch of hygiene the standard and classical treatise of Sir James Clark (vide vol. XII)—a work of special value, as treating of the therapeutical effects of climate, while the preceding are confined almost exclusively to the pathological. Farther, the influence of age and of seasons in disease was noticed in a review of Dr. Fenger's work (in vol. XIV) as well in the treatises on hygiene as in articles indirectly connected with the subject. The influence of manufactures, trades and professions, have received due attention from us; indeed we can refer with perfect satisfaction to our articles on the works of Lombard (vol. I), Fuchs (vol. X) and Ure, Thackeray, Chadwick, &c. (vol. XV.)

Whilst the publications above enumerated refer principally to private hygiene, public hygiene or state medicine has not been forgotten. The population question is discussed in vols. XIV and XVI. The vital statistics of England as exhibited in the reports of the Registrar-General, of Glasgow by Dr. Cowan (vol. XI), the works of Quetelet, and Edmonds, or social physics (vol. III), the laws of contagion and quarantine (vol. XVI), the biological effects of drainage (vol. XI), the state and noxious influence of our grave-yards, as developed by Mr. Walker (vol. X), by the recent parliamentary committee of inquiry, and by Riecke (vol. XV), and lastly, by Mr. Chadwick in his elaborate report on the subject (vol. XVII), have all been duly noticed. We have also diligently discussed the hygiene of prisons (vols. XII and XVII), of foundling hospitals (vol. XIII), and of hospitals for the insane. We refer with perfect confidence to vols. VII and IX for elaborate articles on the last-mentioned branch of public hygiene. The hygiene of the labouring population has not been overlooked; we refer to articles in vols. XI and XV. In addition to all these, medical education and the social position of the profession have at all times had our anxious attention. If we thus review our own labours in this important department of medical science with feelings of pride and satisfaction, we humbly trust, nevertheless, that our readers will think those feelings warranted by the facts, *the things done*. Having thus detailed the bibliography of hygiene, as it is to be found in the British and Foreign Medical Review, we may now turn to our author.

In arranging the plan of his work, after an historical notice and definition of hygiene, Professor Levy adopts the old and well-tried division of agents that influence the health into 1, the circumfusa; 2, ingesta; 3, secreta and excreta; 4, acta. Previously, however, to the discussion of these, he considers the individual differences of man, and the first chapter is occupied with the doctrine of temperaments. We have met with physicians who could not distinguish the temperaments; who, in fact, denied their existence. Yet the doctrine is as old as medicine itself, and under one guise or another has entered into all systems, and guided practice in all ages. Professor Lévy discusses slightly its history, and contends for the real existence of temperaments. It is not possible in truth to define in mathematical terms the material conditions of the sanguine, or of the nervous, or lymphatic temperament; yet they do not the less certainly exist. M. Royer Collard, one of the last writers on the subject, if not the last, has attempted to exhibit their characteristics, and their causes, by means of chemical and microscopical analysis. The attempt seems however premature. Professor Lévy adopts the three temperaments defined by Bégin, namely, the lymphatic, nervous, and sanguine. The states of health and life they represent exercise a direct and almost supreme influence over the organism: it is their common characteristic to modify every part of the body and every function as well in disease as in health. They do not, however, exclude the predominant agency of cirtain organs on the general system; but these are consecutive on some series of morbid phenomena. If the activity of the hepatic system be morbidly altered, a set of general phenomena may arise sufficiently homogeneous and constant to warrant the belief in a bilious temperament. Writers, on such grounds, have indicated a genital temperament, but Professor Lévy classes these constitutional characteristics amongst the idiosyncrasies.

It is essential, however, to remember, firstly, that a temperament may be combined in the same individual with one idiosyncrasy or several; the lymphatic temperament, for example, with the bilious idiosyncrasy. Secondly, the temperaments may be united with each other, as when the nervous is seen in a person whose blood is rich in fibrine and globules. Professor Lévy remarks, that the stumbling-block in practice and the key to individual peculiarities may alike be found in this complication of temperaments with each other, and with idiosyncrasies, in connexion with the variable elements brought into the economy by age, habits, and hereditariness. The true and practical end of hygiene is to modify the temperaments and idiosyncrasies by the creation of new habits or the neutralization of hurtful agencies. When the plethoric idiosyncrasy arises from repletion, the hygienic rules are obvious; so also when the cerebral idiosyncrasy is developed in literary men.

*The sanguineous temperament.* The general characteristics of this temperament is the ease with which all the organic functions are performed. The respiration is deep and full; the sanguification active, digestion quick and easy, innervation well ordered, the movements free and regular. In this, both the greatest harmony of function, and the finest symmetry of body are to be observed. The mind partakes of the bodily characteristics. Gaiety, vivacity, ready imagination, courage, and inconstancy, and more of petulance than deep feeling are seen in persons of the sanguine temperament. It is usually supposed that the vivid colour of the surface indicates an abundance of blood. This, however, is not quite correct; pale persons have sometimes the *internal* character of the sanguine temperament, namely, energy of hematosis, an unusual development of the deep-seated capillaries, salient and well-developed muscles, &c.

It has been supposed that the size of the heart and lungs in persons of the sanguine temperament corresponds to their functional activity. Professor Lévy states that his observations on the young soldiers under his care do not bear out this idea. The sanguine is the temperament most commonly seen amongst them, yet minute and repeated stethoscopic investigations have not shown that the heart in them is of unusual size. It is predominant from its susceptibility; its sympathetic relations are more extended; it responds quickly to all physical and moral excitants. Hence the blushes, as prompt as the emotion which excites them; hence the instantaneous acceleration of the pulse under the finger of the physician, &c. With respect to the lungs, Professor Lévy thinks that it is impossible not to notice that the thorax is more convex anteriorly, larger and deeper, and predominates over the abdomen, the latter being short and shrunk. Largeness and depth of the chest are not however peculiar to the sanguine temperament, for the tall lympathic Alsatians are remarkably broad-shouldered.

What is the composition of the blood in the sanguine? Professor Lévy infers from Andral's experiments that there is an increase of globules, and that it occurs to the extent of 0·140 from the medium quantity 0·127. Professor Lévy also thinks there is an increase in the solid matter of the blood and a diminution of the saline constituents, or rather in the salts of soda and potass.

*The nervous temperament.* If a number of persons be placed under exactly the same circumstances, whether moral or physical, the phenomena of reaction will be seen to differ more or less in each. These varying shades of difference in the phenomena are due to the varying power of the agent, the nervous system. The individuals in whom it is predominantly active are of medium stature, expressive and lively countenance, of thin fibre, small proportions, pale sallow complexion approching to yellowness. The eye is almost always *vif* and restless, the forehead lofty and the whole head disproportionately large compared with the face. If in action, their motions are abrupt, jerking, and surprisingly energetic when compared with the leanness and softness of their muscles. To the touch, the warmth of the surface communicates a sharp and almost biting sensation instead of that feeling of softness and moisture observed in persons of the sanguine temperament.

Two circumstances are considered as belonging specially to the nervous temperament; a considerable encephalic development and special activity in the genital organs. The sexual propensities of "lean dogs" are proverbial, but we were not aware that popular observation on this point had impregnated the doctrines of professors.

The characteristics of the nervous temperament are, of course, mobility —susceptibility of excitation—affectability. The disproportion between the cause of sensations and their effects is usually very great; a slight excitement inducing often extreme derangement of the nervous system. Yet individuals thus endowed are not so debile as their external appearance indicates. They often bear toil and deprivation better than the sanguine; in highly-depressing circumstances, they shine unexpectedly forth as true heroes.

*The lympathic temperament.* This consists in the predominant vitality of all the organs forming the non-sanguineous fluids, as serum, mucus, lymph, &c. It is diametrically opposed to the sanguineous in this, that the heart and vascular system are at a minimum of development. The tissues which should be most abundantly supplied with red blood, as the muscles, are remarkably pale and flaccid. There are fewer red globules in the blood, and more water. The strictly lymphatic individual has fair hair and complexion, the skin is smooth and soft, and marked by veins; the orifices of mucous membranes but slightly coloured, the teeth generally decayed, or of a pale bluish colour; the cheeks patched with red, the manner hesitating, the movements slow, the hands and feet large. Professor Lévy thinks that this temperament is one exhibiting a degradation of the race, and that its causes exist as well in society as in the atmosphere and in special localities.

*The compound temperaments.* The most common is that made by the union of the lymphatic and sanguine. It is the leading characteristic of entire races, as in the upper Rhine, Alsace, and Normandy, and the departments of the North. The remarks of Professor Lévy on idiosyncrasies are interesting, the term including what we should designate as peculiarities of constitution. Doubtless the more limited use of the term with us as to one of the practical results of idiosyncrasy, namely, the special influence of remedies, is less correct than this. If a number of persons be alike exposed to a current of cold air, the pathological results differ according to the idiosyncrasies of each: one will suffer from colic, a second from cough, a third from rheumatism, &c. Predominance of organs will combine with idiosyncrasy or temperaments, as the hepatic with the sanguineous or nervous. According to these views, age modifies the idiosyncrasies as the organs are developed in succession. As to the detection or diagnosis of idiosyncrasies and the practical application of this knowledge to therapeutics and hygiene, little can be said. We have ourselves observed them most frequently in persons of the nervous or sanguineo-nervous temperament with a scrofulous taint.

Professor Lévy goes on to discuss the hygienic relations of age and sex. Under these heads, a good general summary is given, presenting, however, nothing worthy special notice. In stating the recent views respecting the phenomena of menstruation developed by both English and French physiologists, the names of the former, *more Gallico*, are altogether omitted. After a review of the general facts, Professor Lévy admits the doctrine that there is a mensual movement in man.

*Hereditariness.* This chapter commences with some general facts. The second paragraph contains an account of the wonders that Bakewell, "fermier Anglais" worked amongst cattle. Bakewell made up his mind to breed cattle having the "choice cuts," of a "volume énorme" at the expense of inferior joints, and in fifteen years he was able to exhibit a numerous race of kine in which the head and bones were the smallest possible, the legs short, the chest deep, the haunches so largely developed, that the muscular portions alone formed two thirds of the whole weight of the animal. Bakewell "(fermier Anglais) jugea que les cornes de bœufs étaient inutiles et souvent dangereuses; il créa des espèces complétement dépourvues de cornes." Bakewell (to translate our author) decided that the horns of cattle were useless and often dangerous; so he created a species entirely without horns!! Bakewell created, too, that fine race of horses seen drawing the London trucks. But his greatest triumph was his reform of the woolly tribe. The "moutons de Dishley" remain to this day a living monument of Bakewell's creative powers! Such in sober earnest are the statements which a professor of hygiene by concours gravely prints (say 750 times) as well-authenticated facts. We ought to add, however, that they are quoted from a paper by Royer Collard in the memoirs of the Royal Academy of Medicine for 1843. With this exception the chapter on hereditariness contains nothing not already known or acted upon by British practitioners. Professor Lévy adopts the harmless theory of Lallemand as to the mode in which the hereditary predisposition is transmitted. It appears from some remarks of our author that it is one of the fashions of the French to be treated prophylactically for hereditary diseases, and that large sums are expended in advice and "mercurials, martials, antiscorbutics, bitters," &c.

*The influence of habits* in health and disease. Professor Lévy's chapter on this subject contains very interesting remarks. He defines the effect of habit to be 'a new tendency imparted to the organism by the continuance of the same impressions, or by the frequent repetition of the same acts. He justly argues, that this faculty of acquiring new dispositions and tendencies is the basis of human perfectibility. It is alike the moving force of education and the condition most necessary to an efficacious employment of hygiene. Abuse and excess have been generally connected with habits, and philosophers and hygienists have declaimed against them, as if the power to acquire them was not useful, and indeed one of the conservative powers of nature. It is in fact by this, that living organisms become suited to and flourish in the media in which they live. The more complex an organism, the more need of a flexible power of adaptation to external circumstances. It is by the power of habit or custom (the same thing) that man suits himself to all climates and all circumstances, whether social or moral, and assures to himself that amount of happiness which his illimitable desires will allow. Professor Lévy enters into numerous details illustrative of the beneficial power of habit in resisting injurious agencies, as cold, malaria, &c. He also discusses bad habits in detail, beginning with those implicating the organs of generation, as masturbation, venereal excesses, and pollutions, &c.; then those implicating the organs of plastic life, as neumatosis, habitual vomitings (making no mention, however, of ruminant men), diarrhea, constipation, various hemorrhages, &c. Under this head Professor Lévy also reviews habitual discharges considered as salutary and therapeutic. We do not, however, notice anything new in his facts and arguments; nor does he ever rise above an unexceptionable mediocrity. The details most novel and interesting to us are those on nostalgia, an affection of which he seems to have had considerable experience, and the nature and treatment of which he describes in terms far removed from humble philosophic prose.

*The constitution.* The constitution of an individual has been generally confounded with his temperament. It differs, however, according to Professor Lévy, in this that it includes all the peculiarities of an individual; is in fact the general expression, or formula, of his temperament, idiosyncrasies, age, sex, habits, hereditary dispositions. The degree of physical energy, the greater or less perfection of formation, the sum of the resistance made by the organism to the causes of disease, the proportion of vitality, and consequently the probability of life, are all included in this formula. These elements are discussed at length; then the energy peculiar to each temperament and idiosyncrasy is reviewed under separate heads, and various statistical details given, principally from Woillez (noticed in our Seventh vol.) and Messrs. Andral and Gavarret. The researches of M. Quetelet are freely laid under contribution in subsequent sections, having reference to age, sex, height, &c. Professor Lévy remarks, that one cannot but notice that a certain height is coincident with a generally healthy constitution, and *vice versâ*. The corps of the French army which comprise the picked men are the artillery, engineers, sappers and miners, &c.; they are selected solely because of their higher stature, the regulation height being six inches (French) or nearly one tenth above that of the infantry of the line. These select corps not only present fewer cases of sickness, and have a less proportion of deaths than the infantry, but Professor Lévy says it is impossible to glance along the lines without being struck with the difference between the two classes of troops. The very tall men, the grenadiers, are, however, much less vigorous than the short thick-set men in the light cavalry, the chasseurs, and voltigeurs.

*Morbid imminence.* In the chapter thus headed Professor Lévy discusses the predisposition to disease peculiar to the temperaments, idiosyncrasies, sexes, different ages, &c. There is little in the chapter not known, we should think, to the generality of our readers. We select the following table, exhibiting the distribution of diseases as they appeared in the military under Professor Lévy's care at Val de Grace, the majority of whom are aged between 21 and 35 years. The whole number of cases treated during the two years 1840-41, was 1877.

| | |
|---|---|
| Diseases seated in the cerebro-spinal system and its coverings | 100 |
| ,, organs contained in the chest | 810 |
| ,, ,, ,, abdomen | 837 |
| Various diseases (articular, rheumatism, cutaneous phlegmasiæ, lumbago, &c.) | 130 |
| Total | 1877 |

817 cases treated during the year 1842 were localized as follows:

| | |
|---|---|
| Cerebro-spinal system and the organs of the senses | 33 |
| Pleura and lungs | 212 |
| Heart and pericardium | 7 |
| Digestive organs | 335 |
| Intermittent fevers | 134 |
| Cutaneous phlegmasiæ, acute and chronic | 43 |
| Divers affections | 53 |
| Total | 817 |

The result is that the head was the seat of disease in 133 cases, the chest in 1029 cases, the abdomen in 1172, intermittents not included. A chapter on the management of convalescents closes the first division of the work.

The second division discusses the action and uses of the modifications of health; the materia of hygiene, commencing with the circumfusa, or the air, earth, and water. The composition of the air, its electrical tension, &c , comprising the general principles of meteorology, are noticed, firstly, alone, and then with reference to their hygienic action on man. Our notice will not permit us even to state the plan of the author in detail. Suffice it to say, that like his literary countrymen in general, he adopts a systematic and comprehensive method, leaving few details unnoticed. Professor Lévy treats of waters in the same orderly manner: first, of their nature, under the principal division of pluvial, oceanic, running, and stagnant; secondly, of their action on the organism. So also in noticing the earth or soil; its temperature, electricity, structure, configuration, and state of surface are noticed, firstly, historically, then physiologically and pathologically.

Another article is devoted to *localities*, detailing the meteorological, hydrological, and geological conditions having a hygienic value. Next follows a notice of climates, their limits, seasons, diseases, and therapeutic value, a special chapter being devoted to the theory and practice of acclimation.

We freely accord Professor Lévy the praise of industrious research; and we may particularly mention that the most important of the facts he has collected on climate and the other subjects mentioned, are derived from the medical statistics of the British army and navy, and from the works of British writers on tropical climates. A series of valuable tables on the distribution of heat over the globe also illustrates this section. The months of December, January, and February constitute the winter of the table, and the other months are in like manner distributed over the seasons, after the method we suggested to the Registrar-General in our last review of his Annual Reports.

A chapter on habitations, and the hygiene of free and confined air, concludes the volume. A second, we presume, will complete the work.

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## Art. VI.

1. *Lehrbuch der Geburtshülfe für die Hebammen im Grossherzogthume Baden.* Von Franz Carl Naegele, Grossherzoglich Badischem Geheimerathe, ordentl. offentl. Professor der Medizin und Geburtshülfe, Direktor der Entbingdungs-anstalt zu Heidelberg, &c. &c.—*Heidelberg*, 1844.

*Compendium of Midwifery for Midwives in the Grand Duchy of Baden.* By F. C. Naegele, m.d., Professor of Medicine and Midwifery, and Director of the Lying-in Hospital at Heidelberg. Sixth Edition.—*Heidelberg*, 1844. 8vo, pp. 408.

2. *Lehrbuch der Geburtshülfe.* Von Dr. Hermann Franz Naegele, ausserordentlichem Prof. der Medicine an der Universität Heidelberg. Erster Thiel—*Physiologie und Diätetik der Geburt.—Mainz*, 1843.

*Compendium of Midwifery.* By Dr. H. F. Naegele, Professor extraordinary of Medicin at the University of Heidelberg. Part First—*Physiology and Treatment of Labour. — Mayence*, 1843. 8vo, pp. 390.

As the first edition of Professor Naegele's 'Hebammen-buch,' was published before the commencement of this Journal, a review of it has not appeared in our pages; but the value of the work, the numerous editions it has gone through, and above all the high name of its excellent and distinguished author, make it a matter of duty not less than of pleasure to take the present opportunity of bringing it under the notice of our readers; the more so as we are enabled to combine under the same review the first part of a Manual of Midwifery by his son, Professor Naegele, jun.

The value of an Hebammen-buch, or work on midwifery intended for the use of midwives, is somewhat doubtful in the estimation of a considerable portion of the profession in England; although for our own parts we have ever thought that a simple and concise exposition of those points in practical midwifery with which it is necessary that a midwife should be acquainted, is not only a great desideratum in this country, inasmuch as it would prove highly valuable to a numerous class of female practitioners who are at present without any work upon the subject which is adapted to them, but is also, in our opinion, by no means unworthy the pen of a London accoucheur of eminence in his profession.

Although we are well aware that we could point out many midwives, who are thoroughly acquainted with their profession, nay perhaps even more so than many of their *brother* practitioners, it must nevertheless be confessed that the majority, especially of those in the country, are grossly ignorant and illiterate; and that few, except the better sort who have been enabled to receive instructions in London, possess the proper amount of knowledge upon the subject. No laws or enactments exist in this country for the better regulation of midwives, for requiring and ensuring certain qualifications as regards respectability, general education, as well as having received practical instructions in midwifery from a properly authorised professor. No law in England professes to exercise the slightest jurisdiction on this important subject; and as this is a great evil, we trust that means will be found to abate it in the forthcoming Medical Bill.

In Germany the case is very different: intelligent women, possessing the necessary degree of education, are selected from the different towns and villages, and sent to the lying-in hospital of the nearest university for instruction, which they receive from the Professor himself, and attend a certain number of labours there; they are then strictly catechised as to their proficiency before receiving their license to practise. At certain periods also, viz., every one or two years, all the midwives of the district are summoned before the Professor to show that they possess the necessary knowledge of their business, and in this way the whole body of female practitioners, throughout an extensive district, are kept under the immediate supervision of the authorities, and their fitness for practising midwifery strictly tested.

We cannot agree with Professor Naegele, jun., when he states that it is "unnecessary for an accoucheur to attend natural labours, as being a branch of practice essentially belonging to midwives; and although to a scientific practitioner the observing such cases must ever be a matter of interest, yet it would be quite inadmissible for him to make it a source of emolument." (§ 7.) In all great cities, and among the better classes, the management of natural labour will always in great measure devolve on male practitioners, for it is well known that in case of danger they, after all, must be the authorities to whom recourse will be had for assistance in time of need; and as moreover these patients, from their means and station in society, are enabled to command professional attendance of the highest rank, they naturally prefer committing the entire management of their labour to practitioners of this class, to trusting to the discrimination, experience, and perhaps honesty of a midwife for deciding upon the necessity of calling them in. With practitioners of a lower grade, (we allude to the general practitioners,) the same holds good in preferring them to midwives for taking charge of cases of natural labour: firstly because their medical education has been (and therefore ought to have rendered them) vastly superior; and 2dly, because they will therefore be better able to distinguish and appreciate danger in its earliest stages.

In the work of Professor Naegele, sen., we of course find no allusion to the literature of the subject; it is an elementary work of the simplest kind; the arrangement is admirable, the expositions are clear and comprehensive. It commences with a short view of the structure of the human frame, its various organs, and their functions. The parts concerned in pregnancy, labour, &c., are described more fully, but yet in a manner quite intelligible to the class of readers for whom the book is ostensibly intended. The whole work is divided into two parts: the 1st, comprising pregnancy, labour, and the puerperal state under healthy circumstances; the 2d, labour, the puerperal state, and pregnancy under abnormal circumstances. In the latter division he makes use of the same arrangement of Dystocia, which he first described in his 'Erfahr. und Abhandl." 1811, and which subsequent years and experience have proved to be one of the best and most valuable known. He divides the subject of dystocia or faulty labour under two heads: viz., 1, "faulty labours from difficulty or impossibility in completing labour by the natural powers;" and 2, "faulty labours without difficulty in the process."

It is not very easy to give the word "*fehlerhaft*" its full signification in English; we think that "*faulty*" expresses it as perfectly as "*vicieux*" which the French apply to it; perhaps *abnormal* would be better, but in reference to labour, the Greek prefix δυς, in the word dystocia, appears to answer the purpose completely, and has been adopted by general consent.

Under the first head of dystocia Professor Naegele brings the six following species:

1. Dystocia from malposition of the child.
2. ,, faulty size and form of the child,
3. ,, ,, condition of the parts which belong to the child.
4. ,, ,, ,, hard passages (pelvis.)
5. ,, ,, ,, soft passages.
6. ,, ,, ,, expelling powers.

Under the second head, where labour is rendered unfavorable or faulty, without any difficulty or obstruction to its progress he places the four following species:

1. Dystocia from the labour following too rapid a course.
2. ,, prolapsus or otherwise faulty condition of the umbilical cord.
3. ,, other faulty circumstances which render labour dangerous, (convulsions, hemorrhages, &c.)
4. ,, faulty separation and expulsion of the placenta, hemorrhage after labour, and inversion of the uterus.

This arrangement has been adopted by Dr. Rigby in his 'System of Midwifery,' of which we made favorable mention in vol. XII, p. 461.

The description of the placenta by Professor Naegele, jun., is very meager and imperfect. He quotes the recent observations of Professor

E. H. Weber, where he shows that the vessels which pass through the placental decidua, are merely a continuation of the lining membrane of the uterine vessels; receiving also a covering from the soft substance of the decidua. Beyond its bare mention, the placental decidua is entirely omitted, not a word about its curling arteries, or the manner in which the maternal blood circulates through the placenta, nor any description of the orifices which are seen in the sulci between the cotyledons of the placenta, and which mark where the curling arteries of the decidua had been torn through when the placenta was detached from the uterus. Dr. W. Hunter's anatomical description of the human gravid uterus, translated by Froriep is mentioned, it is true, and so indeed is Lobstein's admirable 'Essai sur la Nutrition du Fœtus,' but the author has not in our opinion availed himself sufficiently of their valuable contents; still less of J. Hunter's observations on this subject, which, as also the more recent ones of Dr. Reid, he has omitted altogether; indeed we regret that the whole description of the ovum has been discussed so briefly.

In describing the conformation of the head of a full-grown fetus, Professor Naegele, jun., gives the following judicious remarks:

> "It is of great importance, as regards labour, that the head of a child is capable of undergoing such alterations in its form and size, as to adapt it for passing through the pelvis. As the bones which form the arch of the cranium are moveable at their attachments to each other, their edges are not only capable of greater approximation, but may be made to overlap each other, an arrangement the value of which we see in difficult labours, from misproportion between the head and pelvis. The size of the head, especially in the direction of its straight or transverse diameters can thus be diminished several (six, nine,) lines. The basis cranii alone does not admit of any alteration, for the different bones of this part, and the cartilages which unite them form a solid whole in the full-grown fetus.
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> "The capability of the head for undergoing this change in its configuration does not only depend on the breadth and elasticity of its sutures, but also on the more or less yielding and flexible nature of the bones themselves. In both respects the child's head presents considerable varieties, and is therefore equally variable in the degree of reduction of size which it is capable of obtaining." (§ 126.)

An important fact can scarcely be noticed too frequently, particularly when it is set before the reader in a clear and intelligible manner. The alteration which the head of a full-grown living fetus is capable of undergoing during its progress through the pelvis and external passages, and of adapting its shape by the pressure of the surrounding parts, so as to present the least possible resistance, is one of the most remarkable, and, we may add, beautiful features in the mechanism of parturition. Without this provision, labour would frequently be attended with the most serious and fatal difficulties, owing to the firm unyielding structure of the human pelvis; whereas in the inferior animals a variety of not less interesting changes take place in the different symphyses of the pelvis shortly before and during labour, and enable it to undergo a considerable degree of dilatation, and thus attain the same object on the part of the maternal passages which is gained by yielding and overlapping of the cranial bones of the human fetus.

Professor Naegele, jun., in all the practical details connected with the physiology and treatment of natural labour, has not only strictly followed the same arrangement as that which his father has adopted, but in many cases has embodied, with little or no modification, the paragraphs of the 'Hebammenbuch' into his own work.

To one who is unacquainted with the condensed and laboured style of Professor Naegele, sen., where every sentence has undergone a degree of careful consideration and frequent correction and remodelling, to an extent which can scarcely be credited, it might seem hardly justifiable even for a son to make so free with a work as in all essential particulars to transpose a large portion of it into his own; but uniting in the same individual the relation of parent and teacher, it is not more than natural that he should look upon the highly-finished, and we had almost said perfect, descriptions of his father as incapable of further improvement; still we should have preferred seeing them more strictly quoted and acknowledged; and, after all, the brief manner in which the various subjects are necessarily treated in the 'Hebammen-buch,' is hardly sufficient for a work of the nature which the other professes to be.

In the rules of conduct for a woman during her pregnancy, Professor Naegele, gives the following important axiom: "A woman with child should as far as possible essentially maintain the same mode of living to which she has been previously accustomed, and which had agreed with her before her pregnancy, and only avoid that degree of excess, and everything which may be injurious to her as a pregnant woman." (§ 217.) The old and mischievous notions that a woman must take more than her ordinary amount of food during pregnancy, and less than her ordinary amount of exericse; that she should indulge every slothful feeling, and gratify every morbid whim and longing, which are but too frequently the offsprings of an uninformed and unemployed mind, are fortunately falling into well-merited disgrace and oblivion among the better-educated classes of this country; and with the cultivated portion of our German friends, it is much the same, whereas in the more remote districts in Germany, in a large part of France, and even more remarkably in the Baltic provinces of Russia, all these superstitious absurdities are still in vogue even amidst the higher orders.

We quite agree with Professor Naegele, in saying that "the action of the abdominal muscles is only for the purpose of supporting the contractions of the uterus, and contributes much less to the expulsion of the child; so that labour is even capable of being completed without any assistance from the abdominal muscles." (§ 283.) We differ from Professor Naegele, jun., in saying that the abdominal muscles and *diaphragm* assist the uterine contractions, for there is no reason to suppose that the diaphragm takes any part in the bearing-down efforts which characterize the expelling pains of labour, beyond effecting a deep inspiration, immediately before the effort is made, in order to reduce the capacity of the abdominal cavity still further. We cannot imagine that muscles of inspiration and expiration can ever act *simultaneously*, and therefore against each other; and if we watch the phenomena which immediately precede and attend a powerful effort, we shall find that the first act is to take a deep inspiration and inflate the chest, the next is to close the glottis by the arytenoid muscles, in order to prevent the air escaping from the lungs, and now that the abdominal cavity is diminished to the utmost, and the thorax fixed in its state of inflation, the effort is made under the most favorable circumstances for exerting the muscles of the trunk, particularly those of the abdomen. The diaphragm ceases to contract during the effort, as is seen by the sudden and forcible expiration which follows the effort, and which could not take place if the diaphragm were still acting. We see the same also when a person is prevented closing the glottis by laughter or other involuntary sounds; the power of making a muscular effort is greatly reduced, and the first warning that a violent exertion is about to be made, is the deep inspiration and closed lips which betoken the above-mentioned preparations for that purpose.

Professor Naegele divides the process of labour into five stages, an arrangement which is generally made use of in Germany, and we think it in many respects preferable to the more simple division into three stages, as adopted by the English authors, from its enabling us to give a better description of the whole process. We have heard it used by Dr. Rigby when lecturing on this subject at St. Bartholomew's, who agrees with us in this opinion. Professor Naegele's description of the phenomena which take place during these five stages of labour, forms the most masterly exposition of the whole process we have ever seen; for simple, concise, and yet comprehensive description we could almost pronounce it unequalled.

"*The first stage*, which might properly be called the warning stage, commences with the first preceptible contractions of the uterus, and in primiparæ last until the os uteri opens, but in multiparæ, in whom the os uteri is slightly open during the latter part of pregnancy, until it begins to dilate. These first contractions of the uterus, which are called the *precursory pains*, produce a sensation to the patient as if the abdomen over its whole extent were equally compressed; after a short time it again ceases. This is also accompanied by a heavy uncomfortable feel of dragging about the pelvis, especially the sacrum, not amounting to actual pain. If the hand be laid upon the abdomen at this moment, the uterus feels distinctly hard and tense, and when the above sensation ceases, it becomes soft. In primiparæ the precursory pains continue for a longer, and in multiparæ for a shorter time before labour. Sometimes they last only twelve, eighteen, or twenty-four hours, sometimes several days. They usually come on towards evening, and go off during the night. In this stage, the duration of which is so variable, a copious secretion of mucus takes place from the vagina, and there are frequent calls to pass water. The patient feels restless and anxious; the abdomen subsides still more, and the inferior segment of the uterus, especially in primiparæ, sinks still deeper into the cavity of the pelvis. The os uteri nevertheless is frequently difficult to find at this moment, partly because it is turned quite backwards, viz., towards the sacrum, but chiefly because it is very small, and frequently presents a little depression not larger than a lentil. On the other hand in multiparæ, the thick cushiony os uteri is open to such an extent that the membranes, and through them the presenting parts of the child may be felt. In many cases, and especially in irritable habits, or in consequence of having caught cold, particularly in primiparæ, the precursory pains are so severe as to be mistaken for those of actual labour. The midwife, however, will be able to decide, from the dilatation or non-dilatation of the os uteri, whether labour has really commenced or not." (§ 236.)

"*The second stage* of labour begins with the opening of the os uteri, and in multiparæ with its dilatation. The contractions are now attended with pain, and return more frequently and regularly. The pains go from the loins towards the pubes, but are most severe in the sacrum. The os uteri gradually dilates more and more. During each pain the liquor amnii which is contained in the membranes, is pressed against the dilated os uteri, and the membranes thus distended are pushed through it during a pain in an hemispherical or egg-shaped form. When the pain goes off, the bag of membranes becomes again soft and relaxed, and the presenting head may be again felt through the membranes. The inferior segment of the uterus and the os uteri, which during the pain were hard, again become soft and yielding as they were before the pain commenced. If the os uteri be dilated to the extent of four fingers, and the bag of membranes, which increases in proportion, projects deep into the pelvic cavity, it may be expected to burst during the next pain or so. Because the pains during this stage of labour dilate the os uteri, and thus prepare it for the passage of the child, they are called the *preparatory* pains. They are usually more intolerable to the patient than those during the further progress of the labour, and this chiefly arises from their appearing to her to be of no use, and giving her no proof that labour has advanced, and that she will soon be relieved. The mucus which escapes from the vagina at the beginning of this stage, and which is perceived upon the finger after examination, is mixed with streaks of blood; this is called by midwives '*a show*,' because it is a sign that the os uteri has actually dilated, and that labour has commenced." (§ 237.)

"*The third stage* commences with the discharge of the waters. The pains usually abate somewhat immediately after this, but then return more frequently, stronger, more piercing, and affect the rest of the body. The patient begins to tremble, and can usually neither stand nor sit. The face becomes red and hot. Perspiration breaks out over the whole body. An irresistible impulse to strain accompanies every pain, viz., to support the uterine contractions by those of the abdominal muscles. Frequent desire to relieve the bladder and the rectum. Increasing impatience and frequent fretting and complaining of the pain which is chiefly in the sacrum. Frequent painful cramp in the thighs and calves of legs.

"After the discharge of the liquor amnii, the uterus contracts closer upon the child, and its inferior segment invests the head more tightly, and embraces it more firmly. Hence the cranial bones begin to overlap, the scalp becomes corrugated, and at this spot the caput succedaneum forms during the further progress of labour. The pains of this stage are denominated the *peculiar* pains of labour." (§ 238.)

"*The fourth stage* begins when the head becomes visible between the labia, and ends with the birth of the child. The head presses against the os externum during every pain, forces the labia asunder, and a portion of it becomes visible externally. It presses also upon the perineum, drives it downwards in the form of a ball, and distends it in all directions, from behind forwards, from one side to the other, so that this part which from behind forwards was scarcely the breadth of two fingers, at this stage of the labour becomes four and even more, and therefore gradually grows thinner, and is in danger of giving way. The anus is strongly dilated, and the detruded anterior wall of the rectum becomes pushed out and visible. As the pain goes off the head retires again, usually much slower than it was pushed forwards by the pain, and the violent distension and stretching of the parts again abates. Liquor amnii escapes at times, and chiefly at the beginning and end of a pain; rarely during the pain, or during the intervals. As this stage of labour advances a larger portion of the head becomes visible, and at length advances so far through the labia that nearly the greatest circumference which it presents is now surrounded by the os externum; it now either passes quickly through, or (which is more frequently the case in primiparæ) it does not recede as the pain goes off, but remains stationary, and with the following pain, if this be strong enough, presses with its greatest circumference through the immensely distended os externum.

"In primiparæ, if the head when nearly expelled recedes somewhat as the pain subsides, it is attended with a slight discharge of blood.

"The pains of this stage are still more severe, painful, and enduring; return after a shorter interval, and take a far greater effect upon the patient than those of the previous stage. Their severity increases so much the more from the additional suffering arising from the continually increasing distension of the external parts. They convulse the whole frame, and have hence been called the *Dolores conquassantes*.* The bearing down becomes more continued, and there is not unfrequently vomiting. The patient quivers and trembles all over. Her face is flushed, and with the rest of the body is bathed in perspiration. Her looks are staring and wild; the features alter so much that she can scarcely be recognized. Her impatience rises to its maximum. Loud crying and wailing, and frequently expressions which, even with sensible high-principled women, border closely upon insanity: everything denotes the violent manner in which both body and mind are affected.

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* We have given the received Latin name in preference.

"The moment the head has passed, the pains cease, and the patient finds herself in a state of the most delightful calm. After an interval of more or less duration, fresh pains, but far less severe come on, by which the shoulders are pushed through, after which the rest of the child usually follows quickly, and the remainder of the liquor amnii escapes. A little blood or a few coagula usually come away with the liquor amnii, or immediately afterwards. The contracted uterus, unless there be twins, feels now like a ball of the size of a large child's head. After the birth of the child a violent shivering usually follows." (§ 240.)

"The *fifth stage* commences immediately after the birth of the child, and ends with the expulsion of the placenta

"Immediately after the birth of the child the smooth inner surface of the placenta may generally be felt bulging through the os uteri; a proof that the placenta is usually detached from the uterus immediately after the birth of the child, and lies free within it. In a quarter of an hour, more or less, sometimes half an hour or even three-quarters of an hour, fresh uterine contractions came on, which are usually not particularly painful, and which are called the afterbirth pains or dolores cruenti. A moderate quantity of blood sometimes escapes during these pains. By means of these afterbirth pains the placenta is pushed down through the os uteri, with its inner or smooth surface foremost, into the vagina, and together with the inverted membranes, is ultimately expelled by the joint efforts of the uterus and vagina." (§ 240.)

Professor Naegele, jun. considers that the mean duration of labour is between six and twelve hours, and quotes the valuable results of Dr. Collins's practice; where of 15,850 labours, 15,084 were completed within twelve hours, and of these the greater part, viz. 10,987 within from one to four hours. (§ 250.)

To his subdivision of healthy labours, Professor Naegele, sen., premises the following admirable remarks; we recommend them strongly to the attention of our junior readers, as a proof that no labour, however natural, can be uninteresting, but that even the most natural and favorable cases will present to the diligent observer much that is valuable and instructive.

"The function of parturition possesses various peculiarities, which, apart from its peculiar object, distinguish it from all other functions. Thus, for instance, while the other functions, as long as the individual is healthy, proceed without the slightest pain, but rather a sensation of comfort, parturition, even in a state of health, is attended with pain and efforts, and exertion of strength. Apart from all this, the very important peculiarity occurs in parturition, that nature follows less accurately a certain course, and permits of greater deviations from the ordinary process than in the other functions without its object, viz. the safe expulsion of the fetus, being interfered with. No two labours are exactly alike, even where the result in other respects is equally favorable; and all experienced practitioners agree in saying, that almost every labour presents some peculiarity, and some more or less striking deviation from the ordinary course of this process. Thus, for instance, the duration of the whole labour, or of its different stages is very different. The greatest variety prevails in the severity of the pains, their strength, duration, frequency, and influence on the rest of the system. How variable is the quantity of liquor amnii and of blood discharged during labour, as also the weight of the full-grown fetus (five to nine pounds!) But one of the most remarkable variations is the position which the child presents during labour. For although the presentation of the cranial portion of the head is the most common, the child occasionally presents with the face, more frequently with the nates or feet.

"But all such deviations from the ordinary course, inasmuch as neither mother nor child is exposed to any particular injury or danger, are by no means to be considered as morbid or faulty, but as modifications of the healthy state, such as are observed in the other functions of the human body, only in a less degree." (§ 250.)

"When the axis of the child's body corresponds with that of the uterus, it can be born by the natural powers without danger or injury, supposing that the other requisites for labour are in a healthy state. This can occur in two ways, either the child presents with its upper end or head, or with the lower end or nates." (§ 251.)

Professor Naegele arranges the natural presentations under four heads:

1. Cranial presentations.
2. Face presentations.
3. Nates presentations.
4. Foot presentations.

In 100 labours the average is, that the cranium presents about ninety-three or ninety-four times; the nates and feet about four times, but the face does not occur more than once in 200 cases.

The signs of a natural presentation, and the enumeration of what the finger will detect during examination of the head in the first position, are given with that lucid preciseness which characterize the descriptions of this distinguished teacher.

"That the child is in a favorable position for labour, viz. with its long axis parallel with that of the uterus, may be inferred, towards the end of pregnancy or commencement of labour, from the following symptoms: 1st, when the abdomen is pointed forwards, equally distended, and not too broad at the sides, and shows no marked inequalities; 2d, if the patient feel the motion of the child only at the side, whether it be the right or left; and, 3d, if, on internal examination, we feel a large, round, spherical body presenting. That the presenting part is the head, viz. the cranium, is known by its being uniformly convex and hard. The species of the cranial position will be ascertained from the direction of the sutures and position of the fontanelles. The diagnosis will be rendered difficult by the following circumstances, viz. the head being high up in the pelvis, and moveable; much liquor amnii between the head and membranes; the bladder of membranes remaining tense between the pains; swelling of the cranial integuments; softness of the cranial bones, which sometimes feel like tinsel or parchment, or otherwise faulty development of them; numerous false sutures, &c." (§ 254.)

The head usually presents, during labour, in one of two ways at the superior aperture of the pelvis: viz.

"1, With the right parietal bone (as the part which is deepest in the pelvis) foremost, and small fontanelle towards the left, and more or less forwards; and, 2, with the left parietal bone foremost, the small fontanelle in exactly the contrary direction, viz. to the right, and more or less backwards." (§ 255.)

The first of these two positions is well known to be that which of all others occur most frequently. This is a well-established fact, recognized by all authors and teachers of midwifery since the time of Matthias Saxtorph and Solayres de Renhac, the teacher of the celebrated Baudelocque,* (1771,) who first pointed out the real position of the head in the pelvis at the commencement of labour. The relative frequency of these two positions of the head is between 1 and 1½ to 2. Thus, in 100 cases of cranial presentation, calculated from a great number, the average number in the first position will be about 70, and of the second about 30. According to Professor Naegele, jun., of 3491 cases of cranial presentation which were accurately noted at the Lying-in Hospital of Heidelberg, 2262 were in the first, and 1217 in the second position.

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* De diverso partu ob diversam capitis ad pelvim relationem mutuam; Hafniæ, 1771. De partu viribus maternis absoluto; Paris, 1771.

Professor Naegele, senior's description of the manner in which the head presents and passes through the pelvis and soft parts, when in the first position, is by far the most perfect and complete which we are acquainted with; we quote it in order that our junior readers may profit by it, as we question if such a description of natural labour exists in this language:

"If we examine quite at the beginning of labour, as soon as the os uteri is sufficiently open to let the finger pass, the point of it touches upon a suture, which crosses the os uteri transversely. This is the sagittal suture, and the spot which the finger touches is about the middle of it. If we move the point of the finger along this suture, towards the left, it comes to a place where it seemingly divides into two sutures, from its meeting with two other sutures. These are the two branches of the lambdoidal suture, and the spot where they meet the sagittal suture is the small or posterior fontanelle. If we move the finger from that part of the sagittal suture which corresponds to the os uteri, along it in the contrary direction, we come to a quadrangular spot, without bone, in which four sutures terminate; this is the great or anterior fontanelle. If we bring the finger from that part of the sagittal suture which corresponds to the os uteri, viz. when the os uteri is sufficiently open and soft, in a direction straight forwards, it will come to a projecting conical-formed part of the head, viz. the tuber of the right parietal bone. If the anterior lip of the os uteri does not permit the finger to reach so far forwards, we shall be able to distinguish the parietal protuberance through the inferior segment of the uterus.

"The position of the head at the beginning of labour in the first cranial position is therefore as follows: The vertex is turned towards the sacrum, viz. the middle position of the sagittal suture to the body of the first or second sacral vertebra (according as the head is high or low in the pelvis); the occipital fontanelle is directed to the left, and somewhat forwards, the anterior fontanelle to the right, and somewhat backwards; the right parietal bone is the part which is deepest, and its protuberance is nearly in the middle of the pelvis. The head, therefore, presents during labour at the upper aperture of the pelvis, in a direction which is oblique, both as to its axis and transverse diameter." (§ 258.)

"During the further progress of labour, viz. while the head is pressing through the superior aperture and gradually sinking into the cavity of the pelvis, the two fontanelles frequently are found at an equal height with each other; sometimes the anterior, but more frequently the occipital fontanelle is lowest as the head descends.

"If the head has passed through the upper aperture of the pelvis, with the largest circumference which it presents to it, and approaches to the lower portion of the pelvic cavity, the two fontanelles are usually found to be equally advanced, the posterior turned towards the left foramen ovale, the anterior one to the right sacro-ischiatic notch. The antero-posterior diameter of the head corresponds to the right oblique diameter of the pelvic cavity." (§ 259.)

"As the head becomes pressed against the perineum and os externum, towards the end of the third stage, by the continued action of the pains, and begins to push down the one and to dilate the other, so as to be visible between the labia during a pain, it is the *superior and posterior quarter* of the right parietal bone which corresponds to the os externum, and the right branch of the lambdoidal suture may now be felt running parallel with the descending ramus of the left os pubis.

"The superior and posterior quarter of the right parietal bone is that part of the cranium which first enters the vagina, and the head maintains this oblique direction during its further advance through the os externum, even at the point of its expulsion; if the process be sufficiently slow, careful observation will show that the posterior fontanelle is usually still turned somewhat to the left. On examination, we shall find the right branch of the lambdoidal suture higher, or nearer to the apex of the pelvic arch than the left one.

"As soon as the head is freed from the resistance which it had experienced from the soft parts when passing through the os externum, it resumes its former oblique position, even if it had not maintained it during its expulsion, viz. the face turns backwards and to the right." (§ 260.)

We would fain quote every paragraph on this important and deeply interesting subject, but our limits render this quite impossible; we must therefore proceed to Professor Naegele's description of the mechanism of parturition where the head presents in the second cranial position, and merely content ourselves with saying, that those who wish to gain true and correct views of natural labour, should study these masterly expositions of it at the bedside of their patients.

In the second cranial position, the head, at the commencement of labour, is just as oblique, as regards the transverse diameter and axis of the pelvis, as in the first, with the difference only that the situation of the fontanelles is the reverse of what it was in that position, viz. the anterior fontanelle is now where the posterior one was in the first, and it is the *left* parietal bone, which is that part of the head which is deepest in the pelvis:

"During the further progress of labour, viz. whilst the head is pressing through the superior aperture of the pelvis and descending into the pelvic cavity, the two fontanelles are frequently on a level with each other; sometimes the anterior one sinks deeper down, but more frequently the posterior one, and the sagittal suture continues parallel with the right oblique diameter of the superior aperture and cavity of the pelvis. If the head has already descended into the pelvic cavity, and begins to experience the resistance which the inclined plane formed by the lower half of the sacrum, the coccyx, and sacro-ischiatic ligaments offer to it, it usually makes (and sometimes even earlier) the following turn: the antero-posterior diameter of the head gradually turns from the right oblique diameter of the pelvic cavity into the transverse, and then into the left oblique diameter.

"This turn, as just stated, usually takes place gradually, and in screw-like movements forwards and backwards. If we examine at this time between the pains, and find the posterior fontanelle backwards and to the right, we shall frequently find it during the next pain, especially when the contraction of the uterus is at its height, turned quite to the right side, viz. towards the descending ramus of the right ischium, and as the pain gradually subsides, it returns to its former position. On repeating these examinations during and between the pains, or by keeping the finger in contact with the head, we shall find that the posterior fontanelle which, between the pains is to the right, is turned forwards during the pain towards the right foramen ovale, and returns again somewhat as the pain recedes; or in other words, the head moves with the sagittal suture out of the transverse diameter of the pelvic cavity into the left oblique one, and gradually returns to the transverse diameter again, until at last, at the end of the third stage of labour, the posterior fontanelle remains turned towards the right foramen ovale." (§ 265.)

"As in cases of the first cranial position towards the end of the third stage, the head presses with the posterior and superior quarter of the right parietal bone against the os externum, so in the present instance it is the posterior and superior quarter of the left parietal bone which is turned towards the os externum, and which first advances through it." (§ 266.)

It is to Professor Naegele, senior, that we are indebted for having first pointed out the remarkable fact that in the position of the head which after the first occurs most frequently, and where the occiput during the latter periods of labour is universally allowed to be turned forwards, and to the right, the posterior fontanelle is *originally* directed towards the right sacro-iliac synchondrosis, and *not* to the right foramen ovale as commonly supposed, but that as the head approaches the outlet of the pelvis the occiput turns forwards into this position. The correctness of this interesting fact is now generally recognized over the whole German part of the continent; it was made known in this country fifteen years ago, by the translation of Professor Naegele's essay on the mechanism of parturition; it has been practically established in the Midwifery Reports of the General Lying-in Hospital by the translator Dr. Rigby, and is confirmed and taught by Dr. J. G. Simpson, the present distinguished professor of Edinburgh. So far from the position with the posterior fontanelle to the right and forwards being of such frequent occurrence, as an original position it is one of the rarest. In 3491 cases of cranial position observed by Professor Naegele, jun., it occurred only four times.

The position with the anterior fontanelle forwards, and to the right is also very rare. In the above-mentioned 3491 cases it was observed only eight times. From facts, however, of which we have been for many years aware, we are inclined to think that this proportion is too small, and that the position with the posterior fontanelle to the left sacro-iliac synchondrosis, and the anterior one to the right foramen ovale occurs, at an early period more frequently than is supposed: that, as labour advances the posterior fontanelle turns towards the left foramen ovale, as in the second position it does from right sacro-iliac synchondrosis to the right foramen ovale. This we have ourselves observed, and we suspect that the apparent rarity of the position is rather due to this change taking place sooner during labour than in the other case.

Sometimes also the head, when in the second position, does *not* make the usual turn; the anterior fontanelle, which was originally directed forwards and to the right, instead of turning towards the right sacro-iliac synchondrosis, turns more forwards towards the right foramen ovale, and the superior and anterior quarter of the left parietal and upper portion of the left frontal bone, is the part which first passes through the os externum.

On the subject of face presentations, Professor Naegele gives much valuable information. According to his experience the face may present in two ways, viz.

> "1st. With the right half of the face (as being that part which is deepest in the pelvis) presenting. The forehead turned to the left.
>
> "2d. With the left half of the face presenting. The forehead turned to the right." (§271.)

Of these the former is by far the most frequent. According to the observations of Professor Naegele, jun. it occurred 20 times out of 31 cases of face presentations which he carefully noted; the 11 other cases being with the forehead to the right.

> "In cases of the first position of the face, on passing the finger through the os uteri at the beginning of labour, we usually touch the nose. If we pass it along the ridge of the nose to the left, we shall reach the frontal suture; to the right, we shall feel the nostrils; and anteriorly, the right eye. The long diameter of the face, viz. from the middle of the forehead to the chin, is therefore more or less in

the direction of the transverse diameter of the superior aperture of the pelvis, and the right half of the face is lower than the left.

"As the head sinks deeper into the pelvic cavity, during the further progress of labour, it gradually turns, so that at the end of the third stage we shall find the long diameter of the face in the left oblique diameter of the pelvic cavity, the chin towards the right foramen ovale, and the right cheek to the os externum.

"As the face begins to distend the vagina, so that the right cheek and right angle of the mouth first become visible between the labia, the chin advances beneath the descending ramus of the right pubic bone." (§ 273.)

The livid swelling which the face brings with it into the world, and which corresponds to the caput succedaneum of cranial positions, is situated on the right cheek and right half of the mouth, whereas, on the second position of the face, it occupies the left side.

The fact that presentations of the face have, in all probability, been originally those of the cranium, has not met, we think, with the attention it deserves, since a knowledge of it tends greatly to simplify and explain the phenomena of these presentations. In our very first volume we pointed it out, and may therefore quote our own words in illustration of it.

> "When the head presents at the brim of the pelvis in the first position—viz. the occiput forward and to the left—if by any cause the occiput should be prevented descending into the cavity of the pelvis, or the forehead experience unusual facility in entering it, the head will turn upon its transverse diameter, and the forehead, followed by the face, will sweep past the right sacro-iliac synchondrosis, and occupy the pelvic cavity, while the occiput still remains at the brim; in other words, the first position of the head becomes the first position of the face; and the frequency of that face presentation where the chin is turned towards the right side of the pelvis, (first position of the face,) in proportion to those where it corresponds to the left side (second position of the face), tends not a little to confirm this view." (Brit. and For. Med. Rev., vol. I, p. 110.)

According to the experience of Professor Naegele, as there are two positions of the head and two of the face, so also are there two positions of the nates, viz.

"1st. Nates presentations, with the back turned forwards towards the anterior wall of the uterus.

"2d. Nates presentations, with the back backward.

"In both cases the back of the child is usually found directed more or less to one side, the ischia corresponding to one or other of the oblique diameters of the pelvis." (§ 279.)

Of 109 cases of nates presentation which Professor Naegele, jun. carefully observed, 72 were in the first, and 37 in the second position.

Our limits will not permit us to quote Professor Naegele, senior's, description of the manner in which the nates pass through the pelvis during labour, although we feel that we are leaving incomplete the series of quotations which we had intended making on this interesting subject. It is one which will well repay the trouble of closely investigating it; and we can, from ample experience, assure our younger readers that nothing makes a practitioner so at his ease with unnatural cases as an accurate and familiar knowledge of those which are natural.

Professor Naegele describes a very unusual mode in which the head will sometimes pass through the pelvis in cases of nates presentation. Instead of the head being pressed with the chin upon the breast, as is usually the case, the occiput, as in presentations of the face, is pressed against the nape of the neck. The head enters the brim of the pelvis in this position with the occiput in advance, and the vertex turned towards one or other of the iliac bones of the mother; and as it passes into the cavity of the pelvis, the vertex turns into the hollow of the sacrum, so that when the head is coming through the os externum, the vertex passes over the perineum, the under surface of the lower jaw being turned towards the symphisis pubis.

The real cause of danger to the child's life during labour with the feet foremost is admirably set forth by this distinguished author. In no case can so much mischief be done, and that so easily, as in nates or footling presentations. In no case is a thorough knowledge of, and confidence in, the powers of the uterus, and the application of judicious assistance at the right moment, so important. In pointing out the injurious effects of attempting to hurry the expulsion of the child, Professor Naegele well observes:

> "If it be the uterus which expels the child by the pressure it exerts upon it in all directions, the chin, firstly, will continue pressed upon the breast during the whole passage of the child through the pelvis, and thus ensures the head passing through in the most favorable position. In the second place, the arms remain pressed upon the breast, and are born with it at the same moment. Thirdly, the soft passages will be sufficiently dilated by the gradual advance of the child in order that they should offer less resistance to the head when it follows; and, fourthly, by the gradual progress of the labour, the uterus is only gradually emptied of its contents, its contractile power increased, and thus enabled, by sufficiently powerful contractions, to force the head into and through the pelvis within the proper time. But if the child be pulled at, whereby the pressure of the uterine contractions, which acts on all sides of the child, and which keeps the chin and arms pressed upon the breast, the arms slip up on each side of the head, the chin recedes from the breast, and the head approaches the brim of the pelvis in the most unfavorable position, together with the arms at the same moment. The soft parts are dilated too quickly and violently, and the contracting power of the uterus much injured from its contents having been too rapidly withdrawn. It therefore becomes unable to force the head into and through the pelvis." (§ 289.)

Professor Naegele, jun., has furnished us with copious literary references on the subject of the treatment and management of a woman during natural labour; but, in other respects, the rules which he has given apply merely to midwives, and, indeed, are nearly those of his father's Hebammenbuch. Among these rules there is one which we must not pass by unnoticed, viz., that of giving an enema at the commencement of every labour—a practice which is much neglected in this country. Besides rendering the labour more cleanly, an enema, by unloading the rectum of a mass of solid feces, is frequently the means of removing a serious obstacle to the passage of the head, of rendering the pains much more regular and effective, and the os uteri more dilatable.

We must venture to differ from our excellent author in saying that it is not necessary to preserve any great degree of regularity in suckling a child during the first six weeks after birth, beyond its being put to the breast every two or three hours, for we consider that the strictest regularity and punctuality in this respect is of the utmost importance to its health. During the day it ought to be nursed every two hours and a half, and on no account ought this rule to be transgressed. If placed in a warm cot it will sleep much better than at the mother's side, for the vicinity of the breast is sure to make it restless, and continually craving for more food. A healthy new-born child may soon be taught to sleep for four, five, or six hours without requiring food, and this is of great importance as regards the comfort of the mother.

We here close our review of Professor Naegele's work for the present, and shall delay any remarks on the second part of it (Dystocia) until this portion of his son's book has appeared.

Although we are fully aware that a feeling of regret has long existed that Professor Naegele, sen. has not favoured the world with a work of higher pretensions than a Lehrbuch for Midwives, and that a more elaborate work founded upon it would be a great desideratum; we cannot but regret that Professor Naegele, jun. has confined himself so strictly to the very paragraphs of his father's work, the more so when we call to mind his own excellent publications on obstetric auscultation (translated by Dr. West), and on the mechanism of parturition, which have given ample proofs of learning, industry, and talent, to entitle us to higher expectations.

Of the work of Professor Naegele, sen. we cannot speak too highly or with too much respect; his searching and accurate analysis of the whole progress of natural labour; his masterly descriptions of the various phenomena connected with it; and admirable arrangement of its different modifications, and particularly of the whole subject of Dystocia, which we hope on some future occasion to bring before our readers, have rendered the profession deeply indebted to him, and placed the name of Naegele in the highest ranks of merit and worth.

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## ART. VII.

*Half-yearly Reports of the Government Charitable Dispensaries established in the Bengal and North-western Provinces, from* 1*st August* 1840, *to* 31*st January* 1842. *Printed by Authority.—Calcutta,* 1843, pp. 340.

It appears that, within the last few years, dispensaries have been established in the larger towns of Bengal and the North-western provinces by government, but assisted in some instances by private subscription. To several of these, small hospitals are attached. The Reports derive much of their interest from the circumstance that the medical duties of the institutions are performed principally by native sub-assistant surgeons, educated at the Medical College in Calcutta. Some of them have also native apprentices, of a respectable station in life.

In looking over the statistical documents transmitted from each dispensary, we observed that the greater proportion of the cases treated, are the primary or secondary effects of miasmata. At Dacca, the cholera raged violently in November and December 1840, and two thirds of those attacked died; it was also extremely fatal at Benares, during the hot season of the same year. Of the whole number of 2005 cases treated at the dispensary during the half-year extending from August 1st to February 1st, 470 were cases of intermittent fever, 322 of splenitis, and 196 of cholera biliosa, diarrhea, and dysentery, amounting to 50 per cent. of all treated. The average time occupied in the treatment of intermittents was 22 days, of splenitis 29 days. From the report from Delhi, we learn that a great number of the male inhabitants of that city lose their virility at a comparatively early age, and apply at the dispensary for aphrodisiacs. Cases of gonorrhea, syphilis, and syphiloid diseases are extremely numerous among the poor of the provincies. Mr. Keane, assistant surgeon at Moorshedabad, states:

> "Venereal affections are very common in all their forms. Gonorrhea and chancre are very prevalent. If taken in time, they are seldom intractable. Gonorrhea readily yields to cooling medicine and cubebs; but sometimes injections are necessary. Chancres have been treated with cooling medicines, charcoal poultices, simple dressing, and sometimes the internal exhibition of diluted nitric acid. Severe cases of phagedenic ulcers often occur, the whole of the penis being frequently destroyed at the time of admission, but in no instance has a cure failed to be effected by charcoal poultices, sulphate of copper lotions, simple dressing, and iodine and bark administered internally. Venereal disease is so prevalent, not only in the city, but even in retired country villages, that some general measure for its diminution or prevention, if such could be effected, could not fail to have a beneficial influence on the general health of the people." (p. 26.)

The morals of these people are not placed in a creditable light by the following statement, although, we believe, M. Ricord's experience at Paris is not very dissimilar. We quote sub-assistant surgeon Ishur Chander Gangoolee, of the Benares Dispensary:

> "*Syphilis.* This is far the most common disease in Benares, and is frequently the result of unnatural intercourse. Out of 328 cases of primary syphilis, 80 were fungoid ulcers in the muco-integumentary membrane of the anal opening. The fungus yielded rapidly to powdered sulphate of copper and exposure to the air, and to the internal use of calomel. Seventeen cases of phymosis were operated upon; of 170 patients suffering from secondary syphilis, 37 were young children who had acquired it from their parents." (p. 238.)

Bronchocele, elephantiasis and various forms of leprosy are frequent in some of the districts; at Patna, for example,

> "The *elephantiasis* cases are many of them very severe, and not unfrequently are seen attacking the scrotum, so as to produce tumours of considerable magnitude; the disease begins with some pain in the inguinal glands, and it is probable that, if this were attended to in the early stage, the morbid action which is afterwards set up might be prevented; but the natives take little notice of slight ailments, and it is not until diseases assume a formidable appearance, that they seek relief. I have little doubt but that local bleeding in the first instance and free purging with rest would allay the first symptoms, but they are not employed; and we see men and women too (though not so frequently,) going about the streets of Patna with legs that would literally bear comparison with those of the elephant, from which the disease derives its name. I have dissected limbs of this description, and found the disease entirely confined to the skin and cellular membranes, including the fascia, which are all conglomerated into a fatty gristly substance, with little vascularity, the subjacent muscles being paler and smaller than usual.
>
> "The *leprosy* is a very common disease at Patna amongst the lower classes, and occasionally finds its way among the respectable families; it is often complicated with a venereal taint, in which case the disease rapidly progresses, the joints of the extremities ulcerate, the bones of the nose are absorbed, the skin thickens and becomes blotched, and the whole body is soon reduced to a pitiable state of wretchedness. Some hundreds of such objects wander about the streets of Patna, and being outcasts from their families, depend for their very existence on the precarious charity of the benevolent; the disease is more common among the Hindoo than the Mussulman population; but it attacks both, and the greater frequency in the one case than in the other may arise from food and habits of life." (p. 51.)

Burs or suffadee, and the uprus, are two other cutaneous diseases common in this district, and connected, as well as the syphilitic affections, with the uncleanliness of the natives. It would be well if they had a Mosaic legislator among them, or that a prophet should rise up to preach frequent ablutions.

Ram Eshur Awushtee, the sub-assistant surgeon at Patna, attributes the frequency of bronchocele to the impurity of the water. It occurs principally among the lower castes. The treatment he has found most successful is to tie the neck with a towel for three or four months, and to rub the following ointment over the whole surface of the tumour twice a day. We copy the prescription verbatim:

> "℞ Sujjee communis, ℥j.
> Adeps præparatæ, ℥j.
> Ol. lini, ℥iss.
> Fiat unguent id illineat ægra supra tomorem bis in dies."

Hepatitis seems rare, and so also phthisis.

Although native medicines are used as much as possible, the medical treatment at these dispensaries seems to be conducted after the European model. The old classification, too, of Cullen greets our eyes, reminding us of our scholastic labours. At Benares, "in many hundred cases of cholera," Mr. Butler states,

> "Life was saved by the distribution throughout the city and district of pills composed of two grains of opium and four grains of calomel, with instructions for their administration, and for the use of leeches and aperients in cases in which these remedies might be required; I had the satisfaction of hearing from the officiating magistrate that these means were in general remarkably successful. I had an opportunity of seeing the disease in its most malignant form at the residence of the ex-Raja of Coorg, where two thirds of the cases proved fatal, as might have been expected from the miasmatous nature of the locality; and where many cases of intermittent fever of an intractable character subsequently occurred. There was no other peculiarity in the fever of the year; it was, as usual, accompanied in some cases by severe symptoms and followed by enlargement of the spleen." (p. 11.)

Mr. Keane observes on diseases of the spleen:

> "Even when there is little perceptible enlargement, the patient may be distinguished by a look of debility; and on everting the eyelids, the conjunctiva is found very pale. The spleen sometimes attains an enormous size, and in all cases of enlargement the least violence as a fall, blow, &c., will cause its rupture and the immediate death of the patients. Enlarged spleen is very generally a consequence of repeated attacks of fever. The treatment generally pursued is to give tonics combined with purgatives, assisted by leeches and blisters; unless the disease be complicated with other organic derangements this plan almost never fails. Tobacco plasters have been sometimes tried in recent cases, applied over the region of the spleen, and have effected very sudden cures." (p. 27.)

Mr. Bacon, of the Mooradabad Dispensary, has used the root of the Madar plant with great advantage in old ulcers of long standing, in many varieties of leprosy, in syphilis, scrofula and cutaneous eruptions. Ramnarain Doss also, of the Cawnpore Dispensary, relates a case of lepra in which it was successfully used. Mr. Bacon observes:

> "With an adult I generally begin with three grains three times a day. If this quantity does not produce any disorder of the stomach, the dose is generally increased. In many incipient cases of lepra, the benefical effecits of this medicine were evident. After a lapse of a week or ten days, the pain is alleviated and the itching less. The skin becomes soft, and its discoloration gradually disappears. In herpes, many of them cases of some years' standing, the use of the root has been

most successful. In syphilitic ulcers, I have not depended on it alone, but have combined it with either the blue pill or Plummer's pill; and with this combination I do not think the constitution suffers so much, as in a protracted use of mercury alone it invariably does. In the shape of ointment I have used it with the best effect in bad conditioned sores." (p. 179.)

A native remedy for asthma is subjoined in the words of the reporter, Ram Eshur Awasthee:

"Compound Powder of Cauler Zeeree. This powder has been given with great success in cases of asthma and cough, when other medicines, such as compound squill pills, ipecacuanha, &c., have failed in affording any relief to the patients. The powder stated above is composed of the following ingredients:

"Take of Powder of Calee Zeeree, gr. x.
Sellageet, Puthanee, Loadh, aa gr. iv.
Mix and give three times a day."
(p. 214.)

Amongst the surgical cases we find several instances of capital operations successfully performed. Umachurn Set supplied a man with a nose after the Taliacotian method, who had had his own cut off in a quarrel. Numerous cases of hydrocele were treated successfully with iodine injections. We extract the following report by the operator:

"*A case of lithotomy*, operated by Ramnarain Doss, sub-assistant surgeon. Gobiadah, a Bramhin lad, aged 7, admitted on the 7th July 1841, for stone in the bladder; his father states that the boy has been labouring under this disease for two years, and says, makes water with great difficulty; he has always been seen to squeeze his penis; urine drops involuntarily; and he sleeps very rarely at night: the urine examined to ascertain the state of the bladder, and urine is found to contain pus in it; and therefore it seems that the bladder is diseased; the bladder examined by catheter, and the stone is found to be a large one.

"To have anodyne draught at night.

"10th July. Says had no sleep last night. To have ol. ricini, ʒj, immediately.

"Had three free stools at twelve o'clock, and to have no food. Tinct. opii administered, so as to make him retain urine in order to facilitate the operation.

"10th July, two o'clock. The stone extracted by the lateral operation; the operation lasted only five minutes, while extracting, the stone, being soft in its nature, broke into halves, and into small pieces, as it is seen in the drawing. Besides these, sand-like grains were found lying on the surface of the bladder, therefore to wash them down cold water has been injected. After the operation, a female catheter was kept in the bladder on purpose to let the urine out; a few minutes after, the boy was seen to sleep very profoundly, without any opiates after the operation; and his father said that he never saw him to sleep so very profoundly within these two years.

"13th July. The catheter taken out, complains of pain on pressure on the pubic region; skin little warm; tongue foul; says had no stool since yesterday; the lower part of the belly is to be fomented with hot water.

"To have ol. ricini, ʒj, immediately. As for diet, to have only sago with milk, &c." (p. 256.)

And so the case went on to a cure, like all others of the kind. Ramnarain Doss states: "all the lithotomy operations that have been performed in this dispensary were successful, and all the cases got well without any dangerous symptoms, as peritonitis and others, and we are proud to say that we have not lost a single patient in this operation."

Shumachum Dutt, sub-assistant surgeon at Allahabad, (and subsequently at Jubbulpore,) and joint-editor with Dr. Spilsbury of the Hindostance edition of the London Pharmacopœia, performed the following operations successfully: Amputation below the knee 1; of the penis 1; for cataract 4; for fistula in ano 3; fistula in perineo 1; paracentesis of the abdomen 8; for entropium 3; for removal of encysted tumours 2. In medico-chirurgical cases we find the treatment of these young native practitioners judicious. Let the following case, reported by Ramnarain Doss, be our witness:

"*A case of concussion of the brain.* Buddoo, a barber by occupation, aged 17, admitted 9th May 1841, for concussion of the brain. It is stated that, in the bazaar, he had been kicked down by a horse; on admission he was as if in profound sleep, and does not answer to the questions put to him; the pulse was small and slow; the head examined, no fracture and nothing of the kind was found, but a small cut on the forehead; at eight o'clock the pulse rose, and began to be full, strong, and hard; and the skin became warm which was before of natural temperature; at nine o'clock at night he was bled to one lb.; after the bleeding he began to speak, but not rationally. He was asked where is he, and what is the matter with him, (he answered after a long time,) that he is in the Kuttowal's Chowbutarah, the place where he was first taken on the reception of the injury, and that nothing is the matter with him; the head is to be kept cool by cold lotion, and to have hydrarg. submur., gr. ix, immediately.

"10th May. Pulse quick and weak; skin little warm; and still says that he is in the Kuttowal's Chowbutarah, and if asked what is his name, he says Buddoo, a barber by occupation; had no stool last night; to have pulv. jalap. co., ʒj. immediately.

"At twelve o'clock he had one stool, and therefore to have sulph. magnes., ℥j, immediately.

"10th May, four o'clock. At four o'clock he had three free stools; pulse full and hard; and if questioned answers rationally; complains of pain in the head, and round the wound; skin too much warm; at five o'clock he became again insensible; pulse became fuller, stronger, and harder than before; and when asked where is he and what is the matter with him, he still says that he is in the Kuttowal's Chowbutarah, and that nothing is the matter with him.

"Bled again to ten ounces; to have hydrarg. submur., gr. iv, pulv. antimonialis, gr. iv, one time in the night.

"11th May. Bowels once moved very early this morning; now he speaks very rationally, and says he is doing well; to have pulv. jalap. co., ʒj, immediately." (p. 248.)

And he did well.

Amongst the documents published in this volume is a sketch of the medical topography (called a Statistical Report) of Patna, by Dr. Davies. There are hospitals for the prisoners, the insane, and the poor, the latter having thirty beds. Appended to this Report is an account of the native treatment of leprosy and elephantiasis in Patna, and the formulæ of the medicines in use; also a table of indigenous medicines, with their Persian and Latin or English synonym; their native name in Roman and Hindostanee character; and their operation, use, and doses in English. Both these documents, as well as the Report of the Patna Dispensary, are written by Ram Eshur Awushtee.

The object of the government in educating natives as practitioners, seems to be to supply the population of India with efficient medical advice, and with efficient indigenous remedies. The Hakims or native doctors have no knowledge whatever of anatomy or physiology, not even of the circulation of the blood. Dr. Davies says, "the state of popular medicine differs little from that which has existed for many centuries; the catalogue of materia medica has been greatly added to; but no knowledge of the structure of the human body exists among the best informed of the native physicians; and, as far as I can ascertain, the doctrine of the dogmatists and empirics who lived two or three centuries before Christ, and retained the mode of practice of Hippocrates, but pretended to despise his reasoning, are those adopted in the present day." These regularly educated practitioners are therefore permitted to engage in private practice. In doing this they have, *cæteris paribus*, the same difficulties to overcome as the young practitioner in Europe. The old Hakims are jealous of them, (old Hakims are jealous in England,) and do all in their power to thwart them. Mr. Ross, the surgeon, at Delhi, says, the Mussulman physicians are numerous there, many being dignified with the title of court-physicians, and having extensive and lucrative practice. These individuals do not hesitate to libel their more learned and energetic neighbours, by circulating reports that they use different parts of the human body in the composition of their medicines; and they have made many efforts to prevent patients going to them, even setting men to ply about the door of the dispensary, and dissuade the patients from entering. This opposition seems to have discouraged some of these young men. Amachurn Set, sub-assistant surgeon at Agra, in the proscript to his report, states:

> "My private practice, I am sorry to say, is rather limited, and does not remunerate me sufficiently for my troubles. I have a little practice among the writers in the public offices, both the East Indians and the Bengalies; and I am also sometimes called in by the natives of the place in serious cases, after the Hakeems have failed in affording any relief. I am occasionally rewarded by the wealthy natives on the favorable termination of the cases I am called on to attend." (p. 290.)

It is manifest, however, that these young men are winning golden opinions. The dispensary at Dacca was visited by some native gentlemen, visiting members of the committee, and the following observations recorded by them in the visitors' book:

> "It was crowded with patients, and Baboo Nobinchunder Paul was busy distributing medicines with zeal and activity, so that the inhabitants, being pleased with his services, gave him sincere thanks. They say, that by his services, several patients have recovered, and we also perceive that some men belonging to us have been cured by him." (p. 201.)

The Rev. Mr. Sheppard, the chaplain at Dacca, bears high testimony to the character of this young native surgeon, by stating that, in his opinion, Nobinchunder Paul "is an efficient and accomplished practitioner. His kindness, attention, and professional success in the treatment of diseases have gained the confidence of the inhabitants; and to these excellent qualities and his good conduct in every respect, I have no hesitation in ascribing the progress which the institution is daily making in popularity and usefulness." Mr. Cumberland, the assistant-surgeon at Porree, intrusted himself with confidence to the care of his sub-assistant Baboo Nilmoney Dutt, when labouring under an attack of bilious remittent fever, and has every reason "to be satisfied with his prompt and judicious treatment." At Allahabad, the principal native doctor condescended to place his own son under the care of Shamachurn Dutt for fistula in ano. We observe, too, that Jaudub Chander Set, of the Bareilly Dispensary, has nothing to complain of, and states gallantly that "patients are daily increasing in number; natives, both rich and poor, seem to be pleased with me, because they get good medicines and good treatment from me; the Hakeems of the town are jealous of me, because they have lost much of their practice; the principal operations that I have performed are amputation, lithotomy, and several operations on the eye." (p. 272.)

But in India, as in Europe, science has to contend with the credulity of the ignorant people as well [illegible] with the selfishness of the ignorant practitioner. There, a supposed incarnation of a Hindoo divinity is as attractive to the mob as the shrine of a water-doctor in England. In Moorshedabad, one cause for a diminution of dispensary patients was this: "In the extremity of the Zillah to the eastward, there was believed to have arisen an incarnation of a Hindoo divinity, which drew off immense crowds daily, in the hope of being relieved of all sorts of ailments curable and incurable." (p. 24.)

We are quite sure this volume of Reports on the government dispensaries in Bengal will be highly satisfactory to their promoters, and to the teachers of the young native surgeons attached. Not the least remarkable circumstance connected with their education, is the proficiency in the English language displayed by them in these reports.

## ART. VIII.

*Ueber die Pacinischen Körperchen an den Nerven des Menschen und der Säugethiere.* Von J. HENLE und A. KÖLLIKER. Mit drei Tafeln.—*Zurich*, 1844.

*On the Pacinian Corpuscles on the Nerves of Men and Mammalia.* By J. HENLE and A. KÖLLIKER. With Three Plates.—*Zurich*, 1844. 4to, pp. 40.

ONE might have thought that all that could be seen with the naked eye in the anatomy of the human body had been described some time since; but it is not so. Here is a genuine discovery, and one which ought to have been made a century ago; for many of our readers will, when they read of them, remember that they, as well as ourselves, have seen, without observing, the Pacinian bodies a dozen times. The discovery of one's own heedlessness generates a humour in which remarks had better be suppressed; so we shall proceed straightway to the analysis of the work before us.

The name of these new bodies has been given to them by Henle and Kölliker in honour of their discoverer, Filippo Pacini, an Italian physician, who first noticed them in the beginning of 1830. They then appeared to him to be nothing more than little elliptical whitish masses of indurated cellular tissue attached to the nerves of the hand, and he took little notice of them. However, when he found them again and again, and on the nerves of the feet as well as of the hands, he began to think they meant something, and he undertook an extensive investigation of them. His first (and very imperfect) account was communicated in a letter to the 'Società Medico-Fisica di Firenze,' in October 1835, and was published in the March and April parts of the 'Nuovo Giornale dei Litterati,' (p. 109.) But before this, in 1833, the same bodies had been detected by A. G. Andral, Camus, and Lacroix, to whom the preparation of the nerves of the hand had been given as a subject in a *concours* for the place of assistant to the professor of anatomy; and in 1836, Cruveilhier noticed the fact in his 'Anatomie Descriptive,' t. iv. p. 822; but he added that the little bodies, though gangliform, did not properly belong to the nerves, and were only weakly attached to them; and he regarded them as the consequences of external pressure, assigning for his opinion some imperfect erroneous observations. In 1837, they were described imperfectly by A. G. Andral, who considered them as ganglia of the nerves of tact; and in 1838, Blandin also noticed them in his 'Anatomie Descriptive,' t. ii. p. 675.

But thus far no real progress was made; and it was reserved for Pacini, who first observed these bodies, to gain also the honour of first giving a circumstantial account of them. He had indeed already described them more accurately than any of the French observers; but his next description, which he published in a separate work, entitled 'Nuovi Organi, scoperti nel corpo umano da Filippo Pacini di Pistoja,' 1840, left little to be added, except what could be learnt from a more exact microscopic dissection. This last has been added by Henle and Kölliker; and now it only remains to discover the true physiology of the Pacinian bodies, at which hitherto guesses only have been made.

Pacini's account, we have already said, was completely accurate, as far as it went; but for brevity's sake, we shall make our abstract from that given by Henle and Kölliker, by whom the description has been extended.

The Pacinian bodies are found not in man alone, but in all the domesticated mammalia, and probably in others also. In all they are connected with the nerves. In the human subject, from the first to the eighteenth year of life, they are invariably found in the cutaneous (but not in the muscular) nerves of the palm and sole. They have also been found, sparingly and inconstantly, in nerves at the wrist and elbow; in the upper arm, fore-arm, and thigh, and intercostal nerve, the sacral plexus, solar plexus, and the plexuses adjacent to it. In the mammalia they are also found, but less constantly in the soles; and in the cat they occur in great numbers in the branches of the sympathetic plexuses, in the mesentery and mesocolon, and about the pancreas, (where they have been lately described by M. Lacauchie as organs connected with the lacteal vessels.) Imperfectly developed they may be found in the human fetus as early as the twenty-second week, and in fetal kittens.

The number of Pacinian corpuscles in an individual is very variable, and unaccountably so; it is hard to find them all, so as to reckon them up; but in man, from 150 to 350 have been counted on a single limb; and in the cat, from 50 to upwards of 200 in the omentum. In man, they are most numerous on the digital nerves, especially on the minute branches which are penetrating the cutis; and they may be found in abundance and very distinct on the nerves of the soles, as they run in the subcutaneous fat, and through it to the firmer layers of the cutis. Their arrangement, like their number, is uncertain; sometimes they are single and isolated; more often two or three are set together; sometimes they are placed in numerous groups.

Each Pacinian corpuscle is divisible into two parts: the corpuscle proper, and the stem by which it is attached to the nerve; and in each of these, as regards their structure, the nervous fibre and its investment have to be distinguished; for a single primitive nervous fibril runs through the stem of each corpuscle, and terminates at a little distance from the distal end, or peripheral pole of the corpuscle.

The corpuscles are elliptical, or ovate, or, more rarely, obovate: in man, they are often curved in their axis, so as to be semi-lunar or uniform, or even S-shaped. In man, the smallest (in a five-months-and-a-half fetus) measured ·08 to ·1 of a line in length, and ·032 to ·040 in breadth; in the adult the average size was from ·8 to 1·2 lines in length, and ·45 to ·6 in breadth; and once, one was found nearly two lines long. In external aspect they are uniformly semi-transparent, with a dull opal glistening, and an appearance of a white central cord. The stems are of various lengths and breadths; on an average they measure 1·5 by ·04 of a line. They go from the branch of the nerve at a right or acute, or more rarely, at an obtuse angle; and may be either straight or tortuous; and are inserted sometimes into the central or stem-end of the corpuscles, and sometimes into one or other side.

When the corpuscles are examined microspically they are sure to be marked with longitudinal lines, like meridian lines, of which the outermost are nearly parallel to the outer margin, the interior gradually more nearly parallel to the central axis line; the latter also are arranged much more closely than the former. These lines are the boundaries of so many distinct layers of the substance of which the greater part of the corpuscle is composed, as if by a series of from forty to sixty capsules enclosed one within the other. If a corpuscle be cut across transversely, these same layers appear as concentric rings, and on pressure, a small and variable quantity of clear fluid flows out from between them. The innermost of these capsules, of which the corpuscle may be said to be mainly composed, incloses a nearly cylindrical cavity, rounded, and a little dilated at the end which corresponds to the free or peripheral end of the corpuscle, and pointed at the other end. It is called the *central capsule*, and its *cavity*, which in man is, on an average, ·022 in diameter and ·4 in length, contains the nerve of the corpuscle and a fluid like that between the layers of the corpuscle, but, perhaps, a little more viscid. Next to this central capsule are a certain number of others which surround it very closely, have little or no fluid between them, and are sometimes so far distinct from those around them that they may be called the *system of internal capsules;* they comprise about half of the whole number of capsules. Occasionally, an appearance is seen as if partial transverse septa extended across the cavity between two or more adjacent capsules; and sometimes a dichotomous division of one of the meridian lines indicates either that a capsule has divided into two parts, or that parts of two capsules have been fused together. The several capsules hold together more tightly at the end of the corpuscle than anywhere else; and Pacini ascribed this to an *intercapsular ligament*, which he supposed to run from the surface of the end of the corpuscle to the end of its cavity, fastening the capsules together. But this is not apparent; their union at this part depends sometimes on their being set closer together with little or no fluid between them; sometimes, probably, on the existence of many of the septa before alluded to, and sometimes on the central cavity being curved or crook-shaped at its distal end so that the capsules following its form are, as it were, hooked one within the other. And another consequence of these varieties in the form of the distal part of the central cavity is, that as the capsules are always arranged in layers around it, the lines which mark their boundaries appear, in such cases, irregular and disarranged.

At the opposite, i. e. the proximal or stem end or pole of the corpuscle, the nerve enters. It is surrounded from the point at which it enters the corpuscle to the beginning of the central cavity by what is called the *conical process of the stem.* This is composed of very closely-arranged concentric layers, which appear to be the continuations of the several capsules of the corpuscle thus prolonged over the nerve ; but about this there is a doubt: it is possible that at this part all the capsules have apertures into which the conical process of the stem inclosing the nerve is set.

The Pacinian corpuscles have blood-vessels which are distributed among the capsules, but do not penetrate so deeply as to reach those of the *internal system.*

Such is a description of the comparatively coarse anatomy of these corpuscles. Let us now follow the authors to that which is more minute, and in which we enter upon what belongs almost exclusively to the observations of Henle and Kölliker.

The fluid contained between the layers of the larger and fully developed corpuscules constitutes nearly three quarters of their whole mass; it is quite clear, with a slight tinge of yellow, and appears to be albuminous, like serum.

The capsules are composed of fibro-cellular tissue, with undulating fibrils, and round and elongated nuclei ; and here and there the pale, straight, or branched filaments, insoluble in acetic acid. Each of the capsules (or, at least, of the outer ones,) is composed of a double layer of fibro-cellular tissue, an outer layer with transverse or circular fibres, and an inner layer with longitudinal fibres. The filaments insoluble in acetic acid are, for the most part, combined with the transverse fibro-cellular layer, and its fibres are also transversely arranged ; the longitudinal fibres are imperfectly divided into fasciculi by elongated nuclei, which usually lie on the inner surface of the layers, and project into the intercapsular spaces. The outermost of the capsules is covered by loose fibro-cellular tissue, connecting it with the surrounding tissue, and very difficult to remove.

The most interesting part of the anatomy of these corpuscles is, of course, the nervous filament. A primitive nervous fibre enters through the stem into each corpuscle at one end, and after passing through its central cavity, terminates at the further end of the cavity, not with a loop, but either abruptly or with a bifurcated end, or with a more or less narrow curve ;—*in every case the nervous fibril comes to an end.* The nerve of each corpuscle is derived from the branch on which the corpuscle is attached, and it passes rather tortuously through the corpuscle's stem and its conical process till it reaches the cavity of the corpuscle ; in the stem it is closely surrounded by fibro-cellular tissue ; in the corpuscle it lies free in the central cavity.

As far as the point at which it enters the cavity, the nervous fibril, going to a Pacinian corpuscle, differs in no respect whatever from the ordinary cerebro-spinal nerve-fibrils ; and this is true as well of the fibrils belonging to the corpuscles in the mesentery, as of those in other parts. But when the fibril enters the central cavity, its form at once alters. The appearances which it presents in different aspects in this cavity indicate clearly that, on its entrance, the nervous fibril becomes paler, flattened, and smaller; and thus it continues, with some variations, and only very rarely assuming its previous form, throughout its course within the cavity of the corpuscle. On this fact of the nerve-fibril becoming smaller and flat within the cavity of the corpuscle, Henle and Kölliker raise the question whether a part only of the fibril may not be continued into the cavity; and the answer to this of course involves an answer to the question whether the substance of the nerve-fibrils be homogeneous or composed of an outer substance and an inner one (the axis-cylinder of Purkinje, the primitive band of Fontana and Remak.) At first they thought that that which passed on within the corpuscle was the axis-cylinder separated from what usually surrounds it, but they could not prove this; and the fact that, in some cases, the fibre regains its ordinary dark double-contoured appearance while within the corpuscle, contradicted the suspicion, and indicated that the change effected was only a diminution of size, and flattening of the fibril.

The great majority of the nerve fibrils terminate in the first corpuscles into which they enter: in a very few cases, the fibril passes right through one corpuscle into a second and terminates in it. In a very few cases, also, two fibrils are contained within one corpuscle. The most common mode in which the fibril terminates is in a knob-like swelling; the next most common is a more or less complete and deep dichotomous division. But as to the proportionate size of the terminal swelling, its particular form, the characters of its outlines and of its texture, whether uniform or variously granular, its distance from or closeness to the inner surface of the inmost capsule, in all these points there were so many varities that no general description can be given. The most careful examinations were made to detect whether the enlargement was a ganglion-corpuscle, but the result was against such an opinion.

Henle and Kölliker next enumerate several varieties which they have observed occasionally in the form and arrangement of the corpuscles and their contents; but, as we have already alluded to the chief of these, we shall pass on to the physiological portion of their work.

Of the mode in which the Pacinian corpuscles are developed, all that can be said is that they appear to be developed, like other normal structures, from cells, and acquire their peculiar form earlier than they do their proper textures; moreover, that the internal system of the capsules appears to be developed first, and the others appear to be formed from depositions around these; lastly, that the fluid begins to collect between the capsules when, in other respects, the formation of the corpuscles is nearly completed.

And now what use have these corpuscles? Cui bono? Cui malo? We may exclude the last, for they can hardly be thought the products or the causes of disease. For their inconstancy as to arrangement and mutual arrangement, their absence on most of the nerves, and their rare occurrences in certain animals—the only evidence for their being of pathological origin—are wholly insufficient to establish it; while their universal existence in the human subject, and in, at least, some animals, of whatever age or condition, their uniformly numerous occurrences in certain parts, and the uniformity and highly-organized character of their structures, are quite enough to prove them normal, physiological organs. And on these same grounds the opinion of Cruveilhier and Blandin, that they are accidental products, the consequence of pressure or some external circumstances, may be rejected.

Let us then have the opinion of Pacini himself. He believes that there is an analogy between these corpuscles and the electrical organs of the electric ray and other electric fish, like which these have the most essential structures of super-imposed layers separated by fluid. He says,

> "While in the electric organ of the ray, both poles are placed externally, in our new organs one pole is external, the other is directed towards the nervous system or the centre of the animal sphere. As in a voltaic column, whose elements have the capsular form, or in a series of Leyden flasks which are inclosed one within the other, the one pole of the electric column would be placed in the interior, the other externally at the circumference of the apparatus, and a constant latent atmosphere of electricity would extend itself around the other. And although this electricity should not be actually evident, yet one might understand that, being exposed to the manifold influences of the vital principle, it might act as a conductor (as the other serves as a vehicle for the oscillations exerted by a luminous body,) to impart the mysterious manifestations of our will in the form of motions of some kind beyond the limits of our body, or to bring to our consciousness or observation external objects influencing us from without somewhat as in the disputed phenomena of animal magnetism." (p. 33.)

Pacini does not pretend to lay down principles for animal magnetism, nor to prove a connexion between it and the organs he has discovered; yet, having been deeply impressed with phenomena presented by persons whom he has seen in the magnetic somnambulism, he cannot help entertaining the hypothesis that these organs are "so many animal magnetomotors," supported as such an hypothesis is by strong analogies, "namely, on the one hand, the analogy between magnetism and animal electricity, and on the other, that between these organs and the electric apparatus of fish; and confirmed as it also is, by the obvious and remarkable agreement between the seats of the new organs and the mode in which the phenomena of animal magnetism are brought about."

It need not surprise us, as Henle and Kölliker say, if the animal magnetizers greedily lay hold on such a discovery as this, the first anatomical fact, we will venture to say, that was ever found unopposed to their notions; but we beg them next to try their passes near a cat's belly (of course without gloves,) for the abundance of Pacinian corpuscles thereabouts should produce some wonderful event.

However, if we reject this mesmeric hypothesis, we must confess we have no other to propose. Henle and Kölliker think that that which is most probable is that these organs *are* allied to the electric organs of fish. They certainly have nothing to do with motion, for they occur on no motor nerves; nor can they be connected with acuteness of sensation, for they are abundant on sympathetic nerves, through which no ordinary impressions produce sensation, and they are not found on some nerves that are peculiarly sensitive, e. g. the glosso-pharyngeal and the fifth. They have also the alternate layers of membranes and fluid, like electric organs; yet the experiments which our authors made to detect free electricity in them (in the mesenteries of live cats) yielded no distinct evidence of its existence. With them, therefore, we leave others to settle this question.

## Art. IX.

1. *De la Puberté et de l'Age Critique chez la Femme, au point de vue physiologique, hygiènique, et médical, et de la Ponte périodique chez la Femme et les Mammifères.* Par M. A. Raciborski.—*Paris*, 1844.

*An Essay on the Physiology, Hygiene, and Medical Management of the Epochs of Puberty and Cessation of the Menses in Women; and on the Periodical Discharge of Ova in the Human Female and in Mammifera.* By M. A. Raciborski.—*Paris*, 1844. 12mo, pp. 534.

2. *Beweis der von der Begattung unabhängigen periodischen Reifung und Loslösung der Eier der Säugethiere und des Menschen als der ersten Bedeingung ihrer Fortpflanzung.* Von Th. S. W. Bischoff. —*Giessen*, 1844.

*Proof that the Periodical Maturation and Discharge of the Ova, independently of Coitus, in Mammalia and the Human Female, constitute the essential condition of their Propagation.* By Prof. Bischoff.—*Giessen*, 1844. 4to, pp. 54.

The work of M. Raciborski consists of a reprint of several papers which appeared in one of the French medical journals in the autumn of last year, and forms the first part of a treatise on Menstruation and its Diseases, which he purposes completing speedily. Its most important parts are those which illustrate the periodical maturation and discharge of ova during menstruation in the human subject, or at the rutting season in animals; and in which the author endeavours to establish the close analogy between these two phenomena in the purposes which they subserve as well as in the occurrences by which they are attended.

The menstrual function has been for ages a theme on which physiologists have allowed their fancy to run riot; and the superstitions of the vulgar concerning it have often been but little more absurd than the hypotheses of the learned. Some have denied that it is a natural phenomenon at all, and have regarded it as one of the evil results of civilization; others have professed to see in it a part of the penalty inflicted on our first parent for her sin; while again others have pronounced it to be a beneficial arrangement for abating the ardour of the sexual feelings; and believe that it thus answers a high moral purpose. It has been said to be the means of getting rid of that superfluous blood which is employed during pregnancy in the nutrition of the fetus, and thus preventing plethora; while the writers of the chemical school propounded the theory, that it is a great means of effecting a monthly purification of the blood from all effete and noxious ingredients,—a hypothesis which tallies closely with the opinions of the vulgar. In the midst of these theories, and fifty others which it were bootless to detail, the points of resemblance between the menstrual function and the rut of animals did not escape notice. There were many points of dissimilarity, however, which, so long as the mere discharge of a certain quantity of blood was regarded as constituting the essence of menstruation, prevented the resemblance between the two functions being fully recognized, and the causes and signification of menstruation being understood.

It would occupy more space than we can allot to it, to trace ever so briefly the successive steps by which, setting out from little more than pure hypothesis, we have now arrived at almost demonstrative proof that "all the phenomena of menstruation depend upon the ovaria, and that at each period a Graafian vesicle bursts, and its contents escape." Many claimants participate in the honour of this discovery; but none except Professor Bischoff has done so much as M. Raciborski towards establishing satisfactorily the analogy between menstruation and the rut of animals, and proving that the phenomena attending both are but the outward expressions of those changes in the ovaria by which the periodical maturation and discharge of ova are effected. This subject occupies the latter part of M. Raciborski's book; in the first part he treats of the period of puberty, the management it requires, and the various circumstances which interfere with its occurrence. Many very unfounded notions have prevailed as to the period of puberty in different countries; it has been asserted to be extremely precocious in hot countries, and proportionately tardy in cold climates. Several of these opinions have been refuted by Mr. Roberton of Manchester; and the correctness of his views is in great measure confirmed by M. Raciborski. He conceives that the importance of all those causes which have been supposed to influence the period of puberty has been greatly exaggerated. There are two, however, which seem really to exert considerable influence on the maturity of the human female: the one, the temperature of the country; the other, the natural constitution of each individual. With reference to the former his very elaborate researches show that a difference of one degree in latitude usually gives rise to a difference of one month in the date of the first appearance of the menses; a fact very well shown in the following table:

| " Name of Town. | Latitude. | Age at first menstruation. | Mean annual temperature. |
|---|---|---|---|
| Toulon | 43 | 14·081 | 15· |
| Marseilles | 43 | 14·015 | 15· |
| Lyons | 46 | 14·492 | 11·6 |
| Paris | 49 | 14·465 | 10·6 |
| Göttingen | 52 | 16·038 | 8· |
| Warsaw | 52 | 15·083 | 9·2 |
| Manchester | 53 | 15·191 | 9·6 |
| Skeen | 59 | 15·450 | 6· |
| Stockholm | 59 | 15·590 | 5·7 |
| Sweedish Lapland | 65 | 18· | 4· " (p. 17.) |

From this table too we see that the difference is not produced by mere difference of latitude, but that it is rather to be attributed to the difference of temperature which is usually associated with it. Thus, for instance, menstruation takes place earlier at Warsaw than at Göttingen, though the latitude of the two places is the same; and earlier too at Manchester, although situated one degree further north than Göttingen. The influence of a high temperature in favouring the greater activity of the sexual functions is seen as well in the greater prolificness of the female as in the earlier occurrence of menstruation. M. B. de Chateauneuf, in a passage quoted by M. Raciborski, observes that,

"If we draw a line dividing Europe into two climates, one of which beginning at Portugal and ending at the Low Countries, would extend from 40 to 50°, and represent the south; while the other reaching from Brussels to Stockholm, or from 50 to 67°, would represent the north, we shall find that in the former, a hundred marriages yield 4·573 births to each marriage: while in the latter, the same number of marriages will yield only 4·3.

"This difference is still more striking if we compare the extreme temperatures together. Thus in Portugal there are born 5·10 children per marriage, in Sweden only 3·62." (p 24.)

Individual differences, however, appear to be quite as influential as any general cause, which indeed they not unfrequently counteract. They are observed in all countries, under all varieties of latitude, in all classes of society in cities as well as in the country. "Thus at Skeen, in the neighborhood of Christiania, the average period of puberty is fifteen and a half years; but nevertheless" says M. Raciborski, "I met with four women in the hundred who had begun to menstruate at eleven." (p. 7.)

He carefully examines the influence of race in modifying the period of puberty, and shows that after the lapse of so many centuries, the Jews in Warsaw still retain somewhat of their oriental character, menstruation beginning a few months earlier, and likewise ceasing somewhat sooner than among the Christian inhabitants of the same city. The greater simplicity of a country life is followed by a retardation of the period of puberty, and M. Raciborski ascertained that while, in Paris, menstruation begins at 14·465 years, the age at which it occurs in the villages in the immediate neighbourhood of the capital is 15·020, showing a difference of nearly a year, for which no other cause can be assigned than the different mode of life.

He next notices (p. 77) cases of extraordinarily precocious menstruation of which he has collected many cases from various authors, and finds in the theory he has adopted with reference to the cause of menstruation, a ready explanation of these exceptional occurrences. Menstruation which is the index of aptitude for generation appears last in the train of changes, and when all the organs have acquired their due development. In some countries these changes take place earlier than in others, and there seems to be no reason for regarding menstruation during infancy as anything else than a highly exaggerated degree of precocious puberty.

In both cases the premature appearance of the menses seems to depend on the precocious development of the ova and of the Graafian follicles, which give, as we know, the impulse to all the other organs of the reproductive apparatus; only in the one case this precocity evidently depends on the influence of climate or temperature, while in the other it appears to be the effect of congenital peculiarities. One circumstance in favour of this opinion is the invariable coincidence of development of the mammæ and external genital organs with the hemorrhage, in cases of premature menstruation. These phenomena, indeed, do not occur until the follicles of Graaf are already on the point of attaining that full degree of development which characterizes the period of puberty; they are absent, or exist only in a rudimentary degree, whenever the development of these follicles is impeded by some primitive disposition of the economy; by diseases, or by the congenital absence of the ovaries, or their removal.

In support of this opinion too, he observes that though the Graafian follicles are usually not formed until after birth, he yet found a perfectly developed Graafian vesicle on one occasion in the ovary of a child stillborn at the seventh month of pregnancy.

"Now everything is in favour of the supposition that had this child continued to live, it would have presented several follicles at the conclusion of pregnancy, and it is very probable that if the same degree of vital energy had continued, it would soon have arrived at the end of some months of extra-uterine life; at that state which is not usually attained before the age of fourteen or fifteen years. That which we observed as an exception to the general rule in the above-mentioned fact, may occur in all cases of premature menstruation. It may be said, indeed, that in all cases of this kind, the most important anomaly consists in the premature development and precocious maturity of the ova; the menstrual hemorrhage is only the necessary consequence of this anatomical and physiological peculiarity." (p. 68.)

It must not, however, be inferred that the converse of this holds good, and that in women in whom the occurrence of menstruation does not take place till a very late period, there is a corresponding delay in the maturity of the ova and Graafian follicles.

"So far, indeed, from that being the case, these facts seem only to confirm what we shall hereafter prove more directly, namely, that the menstrual hemorrhage is only a secondary phenomenon attendant on menstruation strictly so called, and that the capital phenomenon of this function consists in the periodical maturity and elimination of ova. There are some women in whom nothing else occurs besides this phenomenon and authentic cases are on record of women who have given birth to several children without having ever menstruated. Still stronger reasons are there for admitting the possibility of those cases in which, after the ovaries have for a length of time performed their monthly function unattended by any other phenomenon, menstrual hemorrhage at length occurs. Many other signs of puberty no less valuable than the flow of the menses serve to indicate the existence of that state when the menstrual flux is absent." (p. 89.)

As puberty approaches, the vesicles of De Graaf increase in number and size, and approach nearer to the surface of the ovary, the most superficial being usually the largest. M. Raciborski does not coincide in the opinion of M. Négrier, who describes these vesicles as presenting a plicated appearance at their edge, owing to their increase of size taking place more rapidly than that of the cell in which each is contained. The notion that each vesicle is contained in a distinct cell of the ovary, not simply imbedded in its stroma he conceives to be incorrect, and the only circumstances under which he has observed any wrinkling of the walls of the vesicle have been, when its contents have become partially absorbed; an occurrence which sometimes takes place in the course of protracted illness or amenorrhea, or at the time of the final cessation of the menses. When, under any of these circumstances, the contents of a vesicle become partially absorbed, a corresponding contraction of the external envelope of the ovary takes place, by which the parietes of the partially empty vesicle are compressed and thrown into wrinkles.

Long continued illness, it is well known, often has the effect of retarding the epoch of puberty, even after some of its precursory symptoms have appeared, or of suppressing the menstrual flux, although it may have already occurred once or twice. In such cases, the development of the Graafian follicles is found to have been arrested, as was observed by M. Raciborski in the case of two chlorotic girls who died between the ages of sixteen and seventeen; and in whom the Graafian vesicles, though as numerous as they should be at the period of puberty, were of extremely small size. In women in good health, however, menstruation when once established continues for the most part to recur regularly every month. Having noted the interval between the first two menstrual periods in eighty-seven women, M. Raciborski found that, in fifty-eight, this interval did not exceed one month. In two women the second menstruation followed six weeks after the first; in four, after an interval of two months; in five, after three months; in four, after four months; in one, at the end of five months; in another, at the end of eight months; in three, at the end of one year; and in another, after two years had elapsed. From these data it appears that, from the first appearance of menstruation, it recurs regularly every month in about two thirds of all healthy females.

It might be supposed, beforehand, that some relation would be found to exist between the length of the interval which separates the first two menstrual epochs, and the age at which the first appearance of the menses takes place. M. Raciborski's facts show that such a relation does actually exist, and that the interval between the first and second appearance of the menses is usually longer in those females who begin to menstruate at a comparatively late period, than in those in whom menstruation begins at an early age. As a further illustration of the connexion between the early occurrence of menstruation and the amount of uterine energy, it may be mentioned that,

> "According to M. Pétrequin of Lyons, the tendency to irregularities of menstruation during the whole period of activity of the uterus bears a direct proportion to the lateness of its first appearance. This distinguished physician states that he has noticed irregularities of this kind only in one out of eight, of all females who began to menstruate at thirteen; while he has observed them in a fourth of those who began to menstruate at eighteen, in a third of those whose first menstruation did not occur till they were nineteen, and in three sevenths of those in whom the menses did not appear till the age of twenty." (p. 112.)

It is to be regretted that we do not know the numbers from which these conclusions are deduced.

The remainder of the first part of the work is occupied with remarks on the hygiene, and medical treatment of young females at the period of puberty; but as it contains little that has not been equally well said by others, we pass it over, and come to the second part, which treats of the various phenomena attending the final cessation of the menses. In this M. Raciborski distinguishes two separate elements: 1st. The cessation of the discharge of ova, and the consequent extinction of the reproductive faculty. 2d. The interruption to the long-acquired habit of periodical hemorrhage. The former he asserts—rather hastily, as we think—to be followed by results precisely the same as are produced by extirpation of the ovaries; to the latter he attributes all those ailments which are well known to attend in so many instances upon this period of female life. His remarks upon these subjects, however, are not of so much interest as his very elaborate description of the changes which the ovaries undergo at the period of the cessation of the menses. The progressive development of the ovaries and Graafian follicles characterizes, as we have already seen, the approach of puberty: their progressive atrophy marks the decline of the uterine functions. Many of the changes which the ovaries undergo at this time have been most accurately described by Roederer in his 'Icones Uteri;' and M. Raciborski has now rendered our acquaintance with them quite complete. It is a well-known fact that the ovaries of women who have ceased to menstruate undergo a marked diminution of their size, while their surface at the same time becomes extremely rough and irregular, so as closely to resemble the appearance of the kernel of a peach. Some observers, among whom is Mr. Girdwood, attribute this change to the ovaria having become as it were emptied of their contents by the successive maturation and discharge of ova during the long period of uterine activity; and in the rough, scarred, and corrugated appearance of the ovaries they see the result of their often-repeated cicatrization. M. Raciborski gives a different and, as we think, a more correct account of the process. He regards the corrugated appearance of the ovaries as the consequence of the atrophy of the Graafian follicles at the cessation of menstruation, and of the wrinkling of the elastic external envelope of the ovaries which necessarily follows. It will be seen, on examining ovaria which have thus begun to wither, that the fluid contents of the follicles have to a great extent become absorbed, so that they present the appearance of grayish or whitish sacs with wrinkled parietes. A slight traction with the forceps draws these sacs from the cavity in which they are contained, and leaves behind merely a circular excavation, lined by the external tunic of the Graafian follicle. When these changes are further advanced, the whole interior of the ovary is transformed into a cellulo-fibrous substance, presenting no trace of the natural structure of the gland, which is so much shrunken as scarcely to exceed the thickness of the broad ligament.

These transformations take place slowly, and the atrophy of the vesicles does not involve them all at once; but some which are in full activity will be seen close to others that have become greatly reduced in size. Thus do the results of anatomical investigation coincide with the daily-observed fact, that menstruation seldom ceases all at once, but grows irregular in its occurrence, and suffers pauses in its appearance before its final termination.

The remainder of the work is occupied with the exposition of the authors opinions and the details of his observations with reference to the periodical discharge of ova in the unimpregnated state, by the female of mammiferous animals. And here we come upon ground where M. Raciborski's honours are contested by another observer: by one of unquestionably higher scientific repute, and whose minutely-recorded observations, setting forth the steps by which he was led to the important discovery that he claims as entirely his own, certainly create a strong prejudice in his favour. M. Bischoff is unwilling to allow to M. Raciborski any higher merit than that which he shares in common with Dr. R. Lee, Mr. William Jones, Dr. Paterson, and MM. Négrier and Gendrin, of having proved the progressive development and final rupture of a Graafian vesicle at the time of menstruation and rut, and the subsequent formation of a *corpus luteum*, independent of impregnation. "The problem to be worked," as M. Bischoff remarks in his letter in the Gazette Médicale of Sept. 25, 1843, "was this: to prove that the escape of ova from the ovaries of mammifera and of the human female, does not depend on sexual intercourse, and on the influence of the semen, but on their own independent and periodical development. To prove this truth, it was necessary to follow the ova in different phases of development, to observe the rupture of the follicles of De Graaf, and to detect the ova in the tubes and oviducts in cases where sexual intercourse had not previously taken place. Now these direct proofs have been furnished by no one except myself. Neither M. Duverney, nor M. Pouchet, nor M. Raciborski, has traced the ova in the ovary and the oviduct." It is indeed unquestionably to M. Bischoff that the honour belongs, of having been the first to furnish that most satisfactory of all proofs, which is supplied by the discovery of the ovum during its transit through the Fallopian tube in an unimpregnated animal; though we cannot think him warranted in his assertion, that M. Raciborski had no notion of the whole truth when he published his first observations. The truth we believe to be, as is so often the case, between the two, for we by no means coincide with M. Raciborski in thinking that the changes which may be observed in the Graafian vesicles prove quite as much as can be gathered from discovering the ova external to the ovary. These changes may indeed, render extremely probable, but they cannot be regarded as proving that conception is merely the result of the accidental meeting of the semen with ova thus periodically discharged. That most important fact—the grand fact, indeed, to which the others are all subsidiary—could not be considered as actually demonstrated until observations had been made, such as those of Prof. Bischoff. Now *previous* to the publication of M. Bischoff's researches, it does not appear that M. Raciborski had ever detected ova external to the ovary; and we think, therefore, that the credit of having rendered certain a fact which previously was only in the highest degree probable, belongs to Professor Bischoff.

But, to return to the observations of M. Raciborski. It was in the sow that he first watched satisfactorily the progressive maturation and final rupture of the Graafian follicles. The peculiar structure of the ovary in that animal renders the alterations that the Graafian vesicles undergo remarkably evident. The first change seen to take place in them is the very considerable increase of those which lie nearest the surface of the ovary, when the animal is approaching that age at which she becomes capable of propagating. At the same time, the thickening of the investing membrane of the vesicles obscures their transparency, and their contents become more viscous and more abounding in granules. At the period of rut, the neighbourhood of some of these vesicles grows much congested, and the slight hemorrhage which often takes place into their cavity gives a bloody tinge to their contents. After continuing thus turgid for some days, the vesicles burst, the ovum escapes, they contract in size, and are found to contain only a little uncoagulated blood. The external tunic now contracts upon the empty cavity, and falling into folds, occasions the stellated appearance presented on making a section of a *corpus luteum.* Time greatly modifies the appearance of these bodies, and eventually they disappear; but during the whole period that the generative power continues, the ovaries will be found to contain Graafian follicles in different degrees of development: some which have long since been ruptured, and of which a single yellow tubercle is the only trace; others which, having burst more recently, present the radiated appearance with great distinctness; while others, nearer the surface, are growing turgid, and preparing for the discharge of their ova, when next the rutting season takes place; and some, still small and undeveloped, are imbedded in the interior of the ovary. Similar changes, though not quite so clearly marked, occur in the ovaries of other mammifera. In the case of a bitch, indeed, that had been shut up by herself, on manifesting the first symptoms of rut, and had been kept secluded from other dogs for a week before being killed, M. Raciborski not only found some follicles quite turgid, and one already ruptured, but likewise detected an ovum in each cornu of the uterus. The detail of this observation leads M. Raciborski into a lengthened exposition of his claims to the priority in this discovery, as opposed to those of M. Bischoff, on the merits of which we have already expressed our opinion. He next gives some interesting notices of analogous facts observed by other physiologists, but from which they had failed to draw all the inferences of which they would have admitted; and then quotes the ingenious and conclusive train of reasoning by which, though unsupported by direct experiment, M. Pouchet of Rouen, as early as 1835, had arrived at the conclusion, "that, beyond a doubt, the ovary, through the whole animal kingdom, discharges the ova independently of impregnation."

From the examination of the changes in the ovary of animals, M. Raciborski proceeds to investigate their alterations in the human female. In doing this he notices incidental observations by various writers, which, though not thoroughly understood by the persons who recorded them, may yet be appealed to at the present day as evidence in favour of the spontaneous rupture of the Graafian follicles. He next criticises the facts adduced by M. Gendrin, and also those by M. Négrier, as instances of the occurrence in the human subject, and shows the utterly inconclusive nature of the observations of the former writer. Even the far more correct account furnished by M. Négrier has the great defect that the subject of his observations were not virgins; and consequently that the appearances he describes may have been the result of impregnation, and therefore cannot be regarded as establishing conclusively the fact of the spontaneous rupture of the Graafian follicle. In two instances M. Raciborski examined the ovaries of females in whom the hymen was perfectly intact, and who died just a month after they last menstruated. In each case one ovary was much larger than the other, and presented a Graafian follicle so turgid, and surrounded by so much congestion, as evidently to show that it would have speedily burst and given exit to the ovum. In no instance has M. Raciborski had the opportunity of examining the ovaries of any person who died while menstruating. M. Négrier, however, examined the ovaries of a young woman who died of violent scarlatina on the second day of the flow of her menses. No rupture of any Graafian follicle had yet taken place, though the coats of one that was very turgid were extremely attenuated. From this fact, as well as from the analogy afforded by animals in whom the rupture of the vesicles does not occur till after the state of heat has continued for some days, M. Raciborski concludes, with great probability, that the escape of the ovum in the human female does not take place till towards the end of the menstrual period. He further supports this opinion by reasons deduced from the appearance of the ovaries in women who have died a few days after menstruation. When we find him, however, asserting "that none but extremely slight traces of a corpus luteum are ever met with in women who have died in childbed," we cannot avoid concluding that his opportunities of examining the human ovary must have been but scanty; and we feel disposed to look with suspicion on arguments founded on such questionable data. M. Raciborski has collected evidence of another kind, however, in proof of the fact that the escape of the ova takes place towards the end of each menstrual period. Out of a large number of patients in the Clinique d'Accouchemens at Paris, whom he questioned as to the date of their last menstruation, and also of their having had sexual congress, fifteen only were able to furnish clear replies to both inquiries, but the answers of these fifteen all tend to substantiate M. Raciborski's opinion.

Such is an outline of M. Raciborski's observations; we will now turn to the carefully conducted investigations of Professor Bischoff. The various phenomena of generation had for years formed his especial study; but he long acceded undoubtingly to the old theory "which regards the escape of the ovum from the ovary, or the first condition essential to its development, as in some way or other necessarily connected with sexual congress." A repetition of the experiments of Nuck, Cruikshank, Haighton, Grassmeyer, Blundell, and Hausmann, first satisfied him that the escape of mature ova from the ovary was not determined by any action of the male semen. These experiments, of which he gives a minute detail, consisted in interrupting the communication between the vagina and ovaries by excision of part or the whole of the uterus, and then examining the bodies of the animals more or less speedily after they had had intercourse with the male. This first step of his investigation led him to the conclusion,

> "That these experiments of my predecessors and myself prove most positively that, although the entrance of the male semen into the fallopian tube, and its access to the ovaries, and its consequent action be prevented, yet, on the occurrence of heat, (and in the above-mentioned cases after copulation,) exactly the same changes occur in the ova and ovaries as in the normal condition. The ova maturate, the Graafian vesicles become turgid and burst, and corpora lutea form, the ova escape and enter the oviduct, and some even of the phenomena of their development begin to take place. As the action, however, of the male semen on the ova is prevented, their development does not continue, but retrogrades, and the ova become dissolved and abortive. This last circumstance proves that the entire series of the phenomena is independent of impregnation, and has its origin in the natural course of development of the ova themselves. The influence of the aura seminalis, or the occurrence of resorption of the semen, or the existence of some more mystic agency in sexual congress, which some earlier observers have supposed to be proved by these experiments, would each be grounded on a supposition that I have shown to be untenable, from the fact of the semen coming into actual contact with the ova; and in these cases, too, is especially disproved by the circumstance that these ova, with which such actual contact of the semen was prevented, were insusceptible of development, and perished. Had the influence of the semen and sexual intercourse been the cause of the escape of the ova, and of the development of the *corpora lutea* in these cases, the ova, also, must have been impregnated, and their development must have gone on further. I think, therefore, that notwithstanding the occurrence of sexual intercourse, the independent development of the ova is proved by these experiments." (pp. 17-18.)

It may be doubted whether Professor Bischoff has not drawn a wider inference from these experiments than they quite warrant; since it is perfectly conceivable that the venereal orgasm might exert such an action on the whole system as to occasion the detachment of an ovum, though from the obliteration of the fallopian tube, the access of the male semen, and its consequent impregnation be impossible. The following experiment, however, satisfactorily proves the correctness of this opinion. A young and healthy bitch that had never pupped, was watched for several days after coming into heat, and then was lined. Immediately after coitus, Professor Bischoff extirpated the left cornu of the uterus, together with the ovary and Fallopian tube of the same side. He now made a careful microscopic examination of the parts he had removed, and found that semen had reached as far as the upper angle of the cornu of the uterus, and that the spermatozoa were moving. There was no trace of semen in the tube, but the ovary already presented burst Graafian follicles and distinct corpora lutea. Five ova were discovered in the Fallopian tube, along which they had advanced about two inches.

After the lapse of twenty hours the bitch was killed, Professor Bischoff having calculated that time had then passed sufficient for the semen to reach the remaining ovary, when five small openings were observed in the right ovary, and five corpora lutea were contained within it; five ova too were contained in the Fallopian tube, and had reached the middle of its canal. Spermatozoa, still in a state of activity, were found to have penetrated about three lines beyond the uterine orifice of the tube, but none were found in the rest of the tube, nor were there any about the ova, which therefore, without doubt, were not yet impregnated.

It would seem, from this observation, that the lapse of time between the escape of the ova and their fructification varies: since in other instances six, eighteen, or twenty hours after coition, the Graafian vesicles were found still closed, and the semen was discovered to have traversed the whole length of the Fallopian tube, and to have reached the ovary. For this difference there would seem to be no other assignable cause, than the individual peculiarities of different animals, some of which admit the approaches of the male at an earlier period of rut than others: some while the ova are still contained in the ovary, others not until they have already entered the Fallopian tube. It is not possible to fix definitely the period during which the impregnation of the ova is possible. " But since bitches generally admit the approaches of the male during eight days, and since the first distinct indication of the development of the ova, namely the cleavage of the yelk, begins in the lowest part of the Fallopian tube, at which they arrive about the seventh or eighth day, this would seem to fix the limits during which impregnation is possible in the dog." (p. 22.) From this too it is evident, how thoroughly uncertain a mode of calculating the date of the escape of ova from the ovary, is the hitherto customary one of reckoning from the first sexual congress, and that it can at the most present only an approximation to the real results.

Still more conclusive, however, are those experiments in which animals were killed during the state of heat, but without having been allowed access to the male, and in which nevertheless Graafian vesicles were found ruptured, and corpora lutea developed; and the ova themselves were detected at some point or other in the Fallopian tubes. Some observations of Hausmann indicate this result, but the strange prejudice that led him to deny the existence of the ovarian ovum of course diminishes their value, and confines the evidence afforded by them to the two former points,—the rupture of Graafian vesicles, and the development of corpora lutea. Professor Bischoff relates the particulars of the observations which he made with the view of ascertaining this point. The first was made on a lamb which had never before been in rut, and which was killed some hours after it entered into that state. A Graafian vesicle was found ruptured in the right ovary, and the ovum was detected in the corresponding Fallopian tube. The second experiment was made on a bitch which was watched while in heat, until she appeared willing to admit the male, but was then prevented from so doing. Two days afterwards Professor Bischoff extirpated the left ovary and Fallopian tube, and closed the wound by suture. No Graafian vesicle had burst, but four were extremely turgid, and from 2 to 2½ Paris lines in diameter.

> "I dissected them carefully," says the author, "from the stroma of the ovary, and then laid them upon a plate of glass. As I opened the first, an ovulum, still surrounded by its disc, and 0·0078 of a Paris inch, or 11-50th of a millimeter, in diameter escaped with the fluid. To my surprise, however, this Graafian vesicle contained a second ovulum with its disc, measuring 0·0081 of a Paris inch, or 1-4th of a millimeter, in diameter. The three other follicles each contained an ovum of about the same size. The inner surface of the Graafian follicle was already beset with delicate granulations, the first traces of the mass that forms the corpus luteum, which, as it seems to me, develops itself from the cells of the membrana granulosa. I observed here, very distinctly, in several Graafian vesicles, the manner in which the ova are contained within them. The cells of the disc form a small cone, whose rounded apex receives the ovulum with which it projects free into the fluid, filling the cavity of the Graafian follicle: while it is attached by its base to the wall of the follicle, probably just in that situation where its rupture subsequently takes place.
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> "These ova, however, did not appear to be perfectly mature and ready to escape. For not only were the walls of the Graafian vesicles not very much attenuated, but the cells of the disc were not yet elongated into those fibrils, the existence of which betokens the full maturity of the ovum. The ova, when entirely detached by means of the needle from the *zona*, measured 0·0060, or 0·0065 of a Paris inch, or from 8-50th to 1-6th of a millimeter, in diameter. In all of these the yelk completely filled the interior of the *zona*, except at one place, where, for a very small extent, the yelk-granules had retreated, as though that were the situation of the germinal vesicle. I was nevertheless unable to distinguish it, either while the ova were still closed, or when I had opened them under the compressorium. I feel therefore quite certain that had the bitch been lined at this time, the spermatozoa would have had time to reach as far as the ovaries before the Graafian vesicles would have ruptured." (p. 29-30.)

Five days afterwards the bitch was killed. Four large corpora lutea were found in the ovary, and on careful examination the four ova were discovered in the Fallopian tube, and already three inches distant from its abdominal orifice. The ova still presented the disc surrounding the *zona*, but its cells no longer retained their natural appearance, and their solution had evidently commenced.

> "The ova had somewhat increased in size, being 0·0090 to 0·0097 of a Paris inch in diameter; but the yelk appeared somewhat shrunken, and no longer filled up the *zona*. It retained moreover its usual form, and not a trace of cleavage was evident in it. In one ovum, (that which was nearest to the commencement of the Fallopian tube,) there was evident in the interspace between the yelk and the *zona*, that large vesicle or granule measuring 1-140th of a Paris line, or 1-62d of

a millimetre, which I have already pointed out as being the nucleus of the germinal vesicle. In the three other ova, nothing of the kind was observable. I saw no trace of the germinal vesicle in any of the ova." (p. 31.)

We certainly agree with Professor Bischoff in the opinion that it can hardly be possible to display more clearly than has been done by this twofold observation made on the same animal the whole process of the maturation and escape of ova during rut, and its independence of coition. Still further proof, however, is afforded by the examination of the genitals of the sow, of which three instances are recorded by Professor Bischoff. The existence of the same law through the whole class of mammifera is further illustrated by an observation on the rat, detailed, as all his other observations are, with a minuteness and precision wholly unlike the general terms in which M. Raciborski's observations are couched, and which leave the reader at a loss as to the number and nature of the facts on which his assertions are grounded.

"From all that has been said, it is quite certain that during rut, even when coition does not take place, the ova of mammifera become detached from the ovary, and enter the Fallopian tube where they perish; but corpora lutea form exactly as when sexual intercourse and impregnation have occurred." (p. 38.)

To the latter clause of this sentence indeed, we still cannot avoid withholding our assent; the identity of the corpora lutea formed independently of impregnation with those which succeed to fruitful intercourse between the sexes, appears to us, to say the least, not yet proven. The recent observations of Dr. Ritchie indeed seem to indicate that the whole subject of the structure and varieties of the corpus luteum requires a new and most careful investigation.

We have now noticed the whole of the evidence in support of this new theory of generation afforded by the investigations of Professor Bischoff. The remainder of his tract is occupied with pointing out the probability that the same phenomena which have been proved to take place in animals, do likewise occur in the human subject, and that menstruation in the human female is but a slightly modified expression of the same occurrences as take place in animals during the state of rut. We cannot, however, enter now upon the detail of these arguments, for the mere relation of Professor Bischoff's observations has already led us further than we intended.

For the present then we take leave of the subject, though soon to return to it; since almost every day some new light is shed on its mysteries; or at least inquiries which seem to produce no other fruit, show how much of what has appeared to be most plausible, or most clearly proved, rests either on groundless assumption, or on investigations vitiated by some preconceived theory, or leading to results capable of various explanation.

## Art. X.

*Abhandlung über Spinal Irritation, &c.* Von Ludwig Türck, Doctor der Medicin, &c.—*Wien*, 1843.

*A Treatise on Spinal Irritation; the Result of Observations made principally in the General Hospital of Vienna.* By Dr. L. Türck, &c. —*Vienna*, 1843. 8vo, pp. 84.

What is spinal irritation? and what are its symptoms, course, nature, terminations, and treatment? Dr. Türck defines it as follows: "It has been observed in modern times that in certain nervous, and particularly hysterical conditions, a more or less extended portion of the spinal column was painful on pressure, and when touched with a hot sponge; and that these conditions were frequently cured, or at least relieved, by the abstraction of blood from, and the application of irritants to the painful vertebræ. Hence the opinion, that the nervous symptoms alluded to depended on an irritable condition of the spinal cord,—a condition expressed by the term *spinal irritation.*" It was by an extract from the publication of the Messrs. Griffin (Observations on the Functional Affections of the Spinal Cord, and Ganglionic System of Nerves, 1834), which appeared in Schmidt's Jahrbuch for 1838, that Dr. Türck's attention was drawn to the subject. He then instituted a series of researches, and often found occasion to correct, as he asserts, the vague statements of the English writers just mentioned.

Dr. Türck discriminates between symptomatic and idiopathic spinal irritation: the one being simply an accompaniment of other diseases; the other arising spontaneously, or persisting after the original affection has been removed. He names the increase of the pain, spasm, and other symptoms on pressing on the spinal column, reflexion; and the point, on which the pressure is applied, and these results follow, the reflex point. He adopts these terms because he thinks the reflex-theory will explain the pathological phenomena.

1. *Symptomatic spinal irritation.* In a case of caries of the molars and incisors, with inflammation of the jaws, the pain was reexcited by pressure on the second and third cervical vertebræ, and on the soft parts of the same sides as that affected. In a case of gastric fever, frontal and supra-orbital pain was excited through the four or five upper cervical vertebræ; in one case there was also a peculiar unpleasant sensation in the stomach, with an inclination to vomit; in the other, the unpleasant sensation of pressure in the stomach was excited through the last cervical vertebra, and first dorsal. In typhus fever, pressure on the upper half of the cervical vertebræ excited vertigo, tinnitus aurium, and headache. The sensation of dryness of the tongue and of thirst was excited in two cases by pressure about from the fourth to the sixth cervical vertebræ, and once the disagreeable taste experienced with coated tongue in the earlier stages, was entirely removed by this means. Twice in affections of the liver, the pain in the right shoulder and right clavicular region, and numbness of an extremity, were excited by pressure on the fourth and fifth dorsal vertebræ. These are the majority of the cases in which spinal irritation was a symptom of disease of the digestive organs.

The diseases of the heart and lungs present similar sympathetic phenomena. Irritation at the bifurcation of the bronchi was excited in catarrh and tubercular phthisis by pressure on from the third to the seventh cervical vertebra. In cases of pneumonia, it was not unfrequently observed that pain in the forehead and temples, weight in the frontal region, fulness of the head, and tinnitus aurium, were excited by pressure on the upper cervical vertebræ as far as the fifth. In one case, besides shooting and pain in the forehead, Dr. Türck observed impatience of light, and sensation of heat, and pressure on the eyes, to accompany pressure on the last cervical vertebræ. In many cases of pneumonia, difficulty of breathing and cough or pains under the sternum and ribs were excited by pressure on one or other of the dorsal vertebræ, or even by only gently pinching up the skin. In two instances, the tenderness on pressure extended over the whole abdomen, and in others pain along the false ribs, and numbness of the extremities were excited through pressure on the spinal column. These abdominal reflex phenomena were never observed in tubercular phthisis. The sensation of heat and tickling experienced in cases of hæmoptöe, could be re-excited by spinal pressure in two instances observed by Dr. Türck. In the one, the seat of this sensation (which immediately preceded the hæmoptöe) was on the left side of the lower half of the sternum, and it was re-excited by pressure on the upper dorsal vertebræ; in the other, it was seated in the region of the cartilages of the false ribs on the left side, and was brought on by pressure on the lower dorsal vertebræ. In pleuritis, as in pneumonia, the cephalic symptoms were reproduced by spinal pressure. Numbness of the extremity corresponding to the side affected could also be induced. In endocarditis and diseases of the valves of the heart, dyspnea could be brought on through the lower cervical and upper dorsal vertebræ.

Diseases of the blood also exhibit the phenomena of spinal reflexion. In a case of poisoning by digitalis, spectral flashes and muscæ volitantes could be excited through the last cervical vertebræ; in another, the appearance of green and yellow shoots before the eyes could be brought on by pressure on the cervical vertebræ from the second to the fifth. In diseases of the nervous system, this spinal irritation would of course be expected to appear as a symptom; various instances are related by Dr. Türck. He noticed it, too, in variola, in oophoritis, and in medullary sarcoma of the uterus.

Idiopathic spinal irritation was observed in intermittent fever during its three stages, in hysteria, neuralgia, cramp, and in the rheumaticforms of disease.

*Explanation of the phenomena of spinal irritation.* Spinal irritation may originate through the agency upon the spinal cord of incident excitor nerves coming from organs in a morbid state, or according to Stilling, in consequence of an abnormal condition of the capillary circulation of the spinal axis. This change in the spinal cord, in whatever way produced, is diffused through its substance, and thus engages the points of origin of other nerves, and so excites nervous symptoms, the *apparent* seat of which is the organs to which the nerves whose roots are so affected are distributed. It is in virtue of such a change as this at the roots of the dorsal sensitive nerves, that the state of spinal sensibility is induced. Dr. Türck sets forth reasons already stated by Stilling in support of the doctrine, that it is through the nerves of the surface and not by pressure on the spinal cord that the reflex phenomena are produced, and the pain experienced. We need not go over these reasons as they are exactly those stated by a recent English author. The practitioner must be ignorant indeed who, when he presses on the spinal column, can suppose for one moment that he is pressing, or directly irritating the spinal cord.

The seat of spinal irritation corresponds generally to the reflex point on the back. This is to be accounted for by the short course which the sensitive nerves of the surface of the spine have to run. There are cases, however, Dr. Türck mantains, in which the true seat of the irritation is not in the cord, but in the ganglia on the posterior roots, namely, those in which the excitor nerves are branches of the sympathetic. This he brings forward as something absolutely new, manifestly being ignorant (most happily for himself) that this doctrine has been known to English practitioners for many years.

Leaving the general pathology of spinal irritation, Dr. Türck proceeds to trace the phenomena, according to the anatomical distribution and relations of the nerves. Thus, the shooting and pain in the forehead and temples, excited in cases of pneumonia by pressure on the three upper cervical vertebræ, are situate in the branches of the trigeminus, and Dr. Türck attempts to show from some experiments instituted by Magendie that the origin of this nerve is so low down as that portion of the medulla spinalis corresponding to the second cervical vertebræ. By similar arguments, other excited reflex phenomena are explained. Ocular spectra and amblyopia, together with pain in the head and eyes, are excited by pressure on the nape, and accounted for on the hypothesis that the roots of the trigeminus are irritated at their origin. The cephalic symptoms in dyspepsia are explained by an irradiation of irritation from the roots of the vagus to the roots of the trigeminus. It is not necessary to recount here the anatomical distribution of the vagus, and show how irradiation of irritation on its roots may give rise to dyspnea, cough, vomiting, cardialgia, &c. Nor need we pass, step by step, along the spinal and sympathetic nerves, and trace all the nervous symptoms originating in centric changes at the roots of the nerves. The story has been so often and so well told by English writers, that we can only wonder at the innocent ignorance of their works exhibited by the two most recent German authors on the subject, namely, Stilling and Dr. Türck. We must say, however, that they are much more excusable than those recent writers of our own nation, who bring forward crude essays on the subject, containing not one new fact or argument, and only remarkable as showing that their authors are entirely unacquainted with the physiology of the spinal cord and the pathology of spinal irritation.

We know not whether we rightly infer that because late English writers have displayed so much ignorance, English readers are ignorant, too, of the true pathology of a very numerous class of neuroses. We can state, however, with justice, that the doctrine of reflex function, developed by Dr. Hall, and by some of the best physiologists of our own time, has not yet entered so deeply into the minds of the profession at large, as to extensively modify their views of the pathology and treatment of a certain class of cerebro-spinal affections, or to influence their practice; and this we presume to be a sufficient reason for placing the subject in extenso before our readers.

The incident action of the nerves on the spinal cord and brain, whether in exciting or paralysing, has long been known. Whytt inferred, from some experiments with opium on frogs and dogs, that "not only those nerves, to which opium is immediately applied, are rendered incapable of performing their office, but that the brain, spinal marrow, and whole nervous system are affected in the same manner, *solely* by the action of the *opium* on the nerves which it touches. For its effects upon dogs are too instantaneous to allow of the supposition, that the more subtile parts of this poison are received into the blood, and by that means are conveyed to the brain; and in frogs, after the heart is taken out, and consequently a stop put to the circulation, yet a solution of opium, injected into the stomach and intestines, has the same effect, as when these animals are entire." We quote from his 'Remarks on the Sympathies of the Nerves,' and he details many "sympathies" of the nerves, as, for example, "the contraction of the pupil is not owing to light acting as a stimulus on the iris, but solely to the sympathy between this membrane and the retina," or in Hallian phraseology, the retina is incident excitor to the motor nerve of the iris. And it is to be observed, that although he does not explain, nor attempt to explain, the mode in which this sympathy or *connexion in function* occurs, he makes no error in the classification of his facts. The principle of irradiation of sensation will explain them all.

In stating his views, Whytt was by no means original. Hoffmann, Boerhaave, and others, his predecessors and contemporaries, had previously explained and illustrated them. Whytt's merit consisted in making the theory lucid and the facts consistent. We need not refer to the physiological views of Haller, Unzer, or Prochaska. The quotation which serves as a motto to the publication of the Messrs. Griffin will show how distinctly the doctrine of reflex or centric pathological action was expressed by an early writer of this century. "I wish explicitly to state," says Burns, in his 'Principles of Midwifery,' "that many diseases, supposed to arise from local causes acting directly on the organs affected, do often proceed from disordered states, or preternatural excitement of some portion of the spinal cord. Even inflammation of these organs may be thus produced." The "preternatural spinal excitement" of Burns is simply the spinal irritation of more modern pathologists. A succession of writers holding similar views might be made out. We would only mention Abernethy, Brown, Copland, Billing, Tate, Teale, Marshal, Darwall, William and Daniel Griffin, and Laycock, as the principal English authors of this class. Compared with the doctrines of these writers, we pronounce Dr. Türck's explanation hypothetical, meagre, and unsatisfactory, and in doing this we hold ourselves bound to produce a better. We would first, however, revert to certain established principles in neurology. Pain may be produced in various ways. First, the termination of the sensitive nerves may be so altered by mechanical or physical changes, that pain shall be excited. Thus act the capillary tension in inflammatory affections, and the disruption of the molecules of the nerve by pricking, tearing, burning, &c. But the change thus begun at the terminating molecule must pass on along the trunk of the nerve from molecule to molecule, until it arrives at the central axis; the whole chain is brought into operation. That is one and the most common mode in which pain is produced. But the painful change may be commenced in any part of the course of the nerve; either on the fibril or within the ganglia through which it passes: in this case the painful sensation is referred, not to the point at which the change commences, but to the point at which the nerve terminates. It is thus that persons who have had a limb amputated, and subsequently a morbid growth on the cut end of the nerve, have experienced the most excruciating neuralgia and painful convulsion, apparently in, and referred to, the skin and muscles of the limb long since severed from the trunk.

The morbid change in the course of the fibril may not be, however, so extensive as to cause pain, *per se*; it most usually is not; but it is just so great as to magnify ordinary impressions and render them painful; it acts as a physiological magnifier. It is thus that in cases of spinal irritation, the slightest touch—not pressure,—but the touch of a feather will excite exquisite pain, and this followed by reflex acts. That the cutaneous nerves of the back are often in this highly sensitive condition from some physiological change in their course, and not at the periphery, is undoubted; but we strongly object that the dorsal sensitive nerves are not exclusively, or even generally, in this morbidly sensitive state. The subcutaneous tubercle, a small knob on a nerve, is an example of this kind, for the slightest touch will often induce general convulsions. Not unfrequently in cases of hysteria, there is a tender spot on the middle of the sternum, and pressure here induces a convulsive gasp: or there is a tender spot on the vertex, or some circumscribed spot of the scalp, pressure on which excites various nervous symptoms. The mere sensual nerves, as the optic, olfactory, and auditory, are also often in this "affectible" state, so that colours, as red and black, sweet odours, and acute sounds will induce general convulsions, and other reflex phenomena. In this case, the doctrine, of the true spinal system are inapplicable, because, according to this, the brain and cerebral nerves are inexcitor; it is most manifest, however, that such cases cannot be explained by the doctrine of exclusively *spinal* irritation.

If we carefully analyse the symptoms observed in well-marked cases of spinal irritation, we shall find that they can all be elucidated on the supposition, that there is a centric change so operating as to exalt the functions of the cerebro-spinal axis. This change can scarcely be considered strictly structural, because we know that structural changes are marked by anæsthesia, or paralysis: on the other hand, we know that the circulation may be the medium through which the actual change is induced. Opium renders frogs tetanic, as strychnine acts on man and lower animals; the slightest touch of the surface in poisoning by strychnine is sufficient to excite convulsions. The poison of the rabid dog so exalts the functions of the incident excitor and reflex motor nerves of the respiratory and spinal ganglia, that a breath of air on the face will excite a convulsive gasp and general spasms. In "spinal irritation" the change is probably in the capillary circulation: 1, of the cerebro-spinal axis; 2, of the ganglia of the sympathetic, or ganglia of the posterior spinal nerves; and 3, of the fibrils of the nerves themselves. This purely functional derangement of the nervous system has been termed neuræmia by Dr. Laycock, one of the recent English writers on this subject before mentioned, and the class of diseases to which it gives origin, neuræmic. (British and Foreign Medical Review, vol. XI, p. 66.)

It will thus be seen that the exciting causes of the phenomena of cerebro-spinal irritation may originate diversely. The exaltation of function of the cerebro-spinal ganglia may be induced, firstly, by the reaction of diseased viscera upon the central axis. It is thus that the cramps in diarrhea, and other intestinal affections, and paroxyms of insanity or delirium are induced. Secondly, the membranes of the spinal cord may be congested, or in such a morbid state as to act on that portion of the axis, as meningeal excitement acts on the brain. It is extremely probable that this is a frequent cause of spinal irritation in persons of an arthritictaint. Thirdly, the nerves passing from the spinal axis, or the ganglia or the posterior roots, may be liable to an influence similar to that just mentioned; and in either case, with results not unlike those of irritation of the cord proper. Fourthly, a morbid condition of the blood circulating through the central axis, may be the exciting cause of the chain of morbid phenomena. This morbid state may itself depend on various causes. It may depend on deficient depuration from a deficient action of excretory organs, as the kidneys, liver, or colon; or on the entrance of a poisonous matter into the circulation from without, or the blood may be in an abnormal state, in consequence of defective assimilation or, as frequently happens, from sudden and profuse sanguineous discharges.

Extensive and complicated as the etiology of neuræmic diseases may appear, a thorough acquaintance with their varied forms, and with the anatomy and physiology of the nervous system renders their diagnosis, prognosis, and treatment comparatively easy. In no class of affections, however, is the experienced eye more necessary than in this; their physiognomy must be known and studied. Symptoms implicating the motor or sensitive nerves are seen in all cases of disease; and the first step in diagnosis is to determine whether they be of central or peripheral origin. There may be exquisite sensibility to light, or great tenderness of the abdomen, for example, and these symptoms may depend on either a peripheral affection of the nerves of the conjunctiva, or of the peritoneal surface, or on a centric affection of the brain, or of the nerves of the abdominal surface. The one is inflammatory, the other neuræmic, and the treatment utterly dissimilar. The diagnosis is all-important: in an example of this kind, an error either way may be fatal.

If we were to attempt an illustration of our remarks as to the diagnosis, we could not take a more apt instance than that of abdominal tenderness. Where it depends on spinal irritation, it will be found that the history of the patient presents instances of her having previously suffered from neuræmic affections. The affectible state of the cutaneous nerves of the abdomen is never observed to occur alone, the nerves of the abdominal viscera suffer also. The kidneys, for example, secrete less or more urine than natural: if less, the deficiency amounts occasionally to complete ischuria; if more, the urine is pale and diabetic. And so there is one or other of the two opposite states of constipation and diarrhea, but more usually constipation, with spasm of the colon, giving rise to colic. In the more aggravated cases, the motor nerves of the large intestines, bladder, abdominal parietes, and lower extremities, are also affected; and tympanites, vesical paralysis, constipation, and paraplegia ensue. The tenderness experienced is not simply tenderness on pressure, but it is a tenderness to the slightest touch, and when there is spinal tenderness, for it is not always present in these cases, the tenderness is of the same kind. We believe there is much error current on this point: writers continually writing about "tenderness on pressure," in cases of (the so-called) spinal irritation, when in fact the tenderness is manifest on the touch of a feather. The abdominal tenderness of peritoneal or visceral inflammation differs altogether from the preceding, both in its history, and concomitant symptoms. It is rarely seen in neuræmic females, except when the cause is quite manifest, as for example, when there is chronic structural disease of the peritoneum or abdominal viscera, accompanied by inflammation, or when it appears in parturient females as a symptom of metritis. We believe the neuræmic state is rarely coincident with structural disease within the abdomen, or terminates in it.

The accompanying phenomena differ widely: in the tenderness from peritoneal inflammation it is impossible not to be struck by the peculiarly haggard expression of countenance of the patient; in neuræmic tenderness, the expression is rather that of peevishness and pain than of mortal suffering. In the latter, there is rarely or never, the grass-green vomit observed in peritonitis; the pulse too is fuller, rounder, and larger, nor are the knees of the patient drawn up as in peritoneal inflammation: in the latter, tenderness on pressure, and not tenderness to the touch, is the distinguishing characteristic.

The diagnosis of all neuræmic affections, whether their seat lies in the head, thorax, or abdomen, is, *mutatis mutandis*, precisely similar. The previous history of the patient, and the physiological character of the symptoms themselves will almost always enable the practitioner to decide. Inflammatory diseases of the heart, lungs, and brain, are peculiarly liable to be confounded with neuræmic affections of those organs. The violent palpitations and coughs, the latter singularly varied as to "timbre," according to the portion of the pulmonary mucous membrane affected, and the deficient respiration, the cephalœa, syncope, &c., accompanying them are often most alarming to the practitioner, and seem to call urgently for the most active treatment. And yet probably a counter-irritant, or an endermic stimulant or sedative, with a slight antispasmodic combined with an aperient or diuretic, and perfect quietude, will suffice to dissipate all these alarming symptoms in a few hours. The rule we should recommend in cases of this kind is to depend chiefly on the *causal* diagnosis; by diligent inquiry to ascertain whether the individual has been exposed to any sufficient cause of inflammation, and if not, and if also the marks or causes of a generally neuræmic state be detected, to temporize and watch. In persons already debilitated by excessive loss of blood or profuse discharges, or who have been ailing with unaccountable complaints for a length of time, abstraction of blood, except the most moderate, we believe injurious even in affections truly inflammatory, and tends to increase the congestion we wish to remove. When the brain is the seat of neuræmia, local or general bleeding is absolutely wrong. With respect to the treatment of cases of cerebro-spinal irritation we would above all observe, that it must be constitutional. They principally occur, idiopathically, in females whose parents are gouty, and of the nervous temperament, or at least who have themselves suffered from affections of the nervous system. Neuræmia of the cerebral and spinal ganglia is not unfrequently seen in females, one or other of whose parents has been insane. This we believe is extremely usual, and the fact is of importance both in the diagnosis and treatment of the affections of all the viscera in connexion with the spinal cord. While remedies suitable to the constitutional peculiarities of the case are administered, endermic medication, on the principle of incident excitor action, will be found of singular benefit; even the metallic neurines, as arsenic, may be thus employed with safety and efficiency. We would conclude this short sketch of the treatment, by the observation that no plan whatever will be successful unless the hygienic condition of the patient, namely, the condition as to mental occupation, sleep, diet, pure air, sufficient light, and exercise be strictly attended to. Remedies should be administered as subsidiary to the attainment of those essential conditions to recovery. Moral treatment in all its branches is peculiarly adapted to cases of this kind, as the brain rarely escapes irritation, and in some instances insane cunning, infirmities of temper, and even nymphomania and other forms of insanity are developed.

## Art. XI.

*On the Changes induced in the Situation and Structure of the Internal Organs, under varying circumstances of Health and Disease; and on the Nature and external Indications of these Changes.* By Francis Sibson. (*Transactions of the Provincial Medical and Surgical Association*, Vol. XII, pp. 307-574.)—*London*, 1844.

Mr. Sibson commences by informing his readers that he some years past discovered that his notions of the "normal and healthy sites of the various viscera were ill defined." Few persons can have intently pursued the investigation of thoracic disease without feeling, to a greater or less amount, the pressure of the difficulty under which this young inquirer suffered; and fewer still would have conceived, or above all steadily carried out for a lengthened period, the plan he employed to remove this difficulty in future investigations conducted either by himself or others. This plan and its results are described in the paper which we propose to analyse—a paper no less remarkable for its originality and modesty of style than the solid information it conveys. We set a very high value on this production, and we anticipate great things from the future labours of its author. We intend paying him a compliment in subjecting his treatise to a close critical examination, and we trust he will receive our criticisms in the spirit in which they are offered.

Mr. Sibson set out by taking diagrams of the position of the viscera, as discovered on post-mortem examination; first, drawing an outline of the ribs and sternum, and then adding the internal viscera, taking care that their bearings to each other and the ribs were accurately planned. After a time he procured a frame and stretched strings across and along it, at distances from each other of three inches, (the whole frame was thus subdivided into forty-five squares;) and ruled a piece of paper with squares of a like fashion, but of one third the size. When the outlines of the viscera of any subject were to be traced, the frame was laid over the body and the objects behind each three-inch square accurately marked on the corresponding one inch square on the paper.

Subsequently, a further modification was adopted at the suggestion of Dr. Hodgkin; the new method consisted in drawing the outlines of the organs on a piece of lace, stretched on a frame and placed over the body, the sketch being transferred by laying the lace over a sheet of paper, with a piece of the "manifold letter-writer" paper interposed. By pressing firmly with a point on the chalked outlines they were traced in black on the paper beneath. This plan is applicable to the living as well as the dead subject. The full-sized diagrams were reduced to the size they present in the author's essay by the pentagraph.

In the first section of the paper, the "actual and relative position of the healthy organs" is examined; the lungs and heart being made the earliest subjects of consideration.

In describing the lungs "above the clavicle," the author observes that the pleura covering this portion of the organ "is strengthened and brought under muscular control by a fascia, the expanded aponeurosis of a small muscle, the pleural scalenus, arising from the transverse process of the last cervical vertebra, and inserted by a dome-like fascia into the whole of the upper edge of the first rib."

In the natural state, the inner edges of the lungs rapidly converge from opposite the clavicle, and usually come in contact at a certain point, which has long been known to vary with circumstances; but the author shows with precision what these circumstances are, and how they act. In the state of health and in the adult, contact takes place just behind the junction of the first and second sternal bones. In children, the thymus separates the lungs; and while the absorption of that body continues incomplete, the point of contact is lower than in the adult. In old age and in cases of emphysema, on the contrary, the place of union is higher than natural. After uniting in the manner described, the apposed edges continue for a short space in contact, separating again at a point ranging between the level of the third and fifth costal cartilages. In cases of pericardial effusion the bulging sac drives the lungs apart in an opposite direction, and raises the point of inferior separation.

In the inferior separation the right lung takes no direct part, as its inner edge passes vertically downwards behind the centre of the sternum, to the attachment of the ensiform cartilage. The inner margin of the left lung passes from the point of separation obliquely downwards to the left, usually taking the course of the fourth cartilage. In robust subjects this line is lower, and it is of course carried downwards by all pulmonary affections, (such as emphysema, bronchitis, pneumonia,) increasing the bulk of the lung. It is pushed slightly upwards by simple enlargement of the heart; considerably so when there is superadded pericardial effusion or adhesion.

The lower edge of the right lung is stated by the writer to pass usually across the conjoint cartilages of the sixth and seventh ribs, and then behind the fifth intercostal space; the lower edge of the left lung is commonly half a rib's breadth lower. The inferior posterior limits of both lungs lie just behind the junctions of the twelfth ribs to the vertebræ, and pass directly outwards and forwards. It is to be remembered that these outlines are of the organs as found in the dead subject.

In the author's minute description of the positions held by the various portions of the heart and the great vessels connected with it, there is little which can be considered as at once new and of practical utility. He observes, (and the fact is indubitable,) that the apex of the heart is almost always, after death, drawn upwards for about half a rib's breadth; we have known the correctness of the results of percussion questioned through ignorance of this point. Yet two pages after (p. 330) the author states that 'in life-time the lower bound [boundary] of the heart is usually about half a rib's breadth higher than it is after death." Here must be a typographical error.

Sounds due to mitral regurgitation are heard, though very faintly, to the left of the seventh and eighth dorsal vertebræ. Now as the aorta is interposed in this situation between the vertebræ and heart, aortic valvular sounds are also audible here. But the following particulars will suffice for their distinction, according to the author's statement. If the abnormal sound detected be also present and louder, opposite the third and fourth dorsal vertebræ, it is due to disease of the aortic valves; but if the sound become louder on approaching the heart's apex, and is not heard behind the upper dorsal vertebræ, it is due to mitral regurgitation. This point is likely to prove useful in cases where the *anterior* diagnosis (if we may so speak) of these affections is difficult.

Mr. Sibson finds that the arteria innominata lies "in front of the trachea, just above the sternum." The fact, that when above the sternum the vessel lies rather to the right of the windpipe, should be added, to render this description correct. Its pulsation is visible in cases of aortic regurgitation.

The author judiciously analyses the influence of the heart's action and of respiration on jugular pulsation. The mere existence of such pulsation, he concludes, is anything but an indication of disease either in the pulmonary valves or elsewhere. In diseases attended with impeded flow of blood through the lungs and heart, the jugular veins contain more blood and their pulsations "are more visible than in health;" but where the impediment is extreme, the veins are in a state of constant distension and no pulsation is visible.

Few points, if any, are possessed of greater interest in connexion with such inquiries as those we are examining, than the precise position of the right and left divisions of the diaphragm. The profession is indebted, as many of our readers are doubtless aware, to Dr. Edwin Harrison for an ingenious method (in the application of which he is himself, at least, eminently successful,) of determining the position of the divisions of the membranous septum in question; and also for the announcement (of which the experience of all careful observers has proved the accuracy,) that those divisions rise much higher into the thorax, than it was formerly the habit to believe. Mr. Sibson, using the more ordinary method of percussion for ascertaining the upper outline of the liver, finds that this usually rises as far as the fourth intercostal space, often even to the fourth rib; in children only to the fifth. Diseases enlarging the liver may carry the right side of the diaphragm as high as the third rib. The left side of the diaphragm in the natural state, as ascertained by Dr. Harrison, is at least as low, and commonly a little lower, than the right.

The position of the liver is materially influenced by the state of the stomach. If the latter organ be moderately distended, the former extends to the left about half way between the ensiform cartilage and the apex of the heart. It extends further in this direction in children and in women. On the other hand, when the stomach is empty, the liver falls over into the space filled by the former when in a state of repletion.

We pass over the author's very circumstantial analysis of the phenomena of inspiration and expiration, as neither remarkable for any useful novelty nor readily susceptible of condensation.

This writer exhibits himself, within certain limits, a partisan of the theory which assigns a laryngeal origin to the respiratory murmurs heard over the surface of the chest. In *tranquil* breathing the inspiratory murmur is, he conceives, doubtless due to the conduction of the laryngeal sound, and not to a new sound generated in the air-cells; else would the inspiratory murmur be loudest where the air-cells are most numerous, while in reality the reverse of this is the case. In tranquil inspiration the air, as it advances, occupies more space, moves slower and with less friction. In expiration, on the other hand, the air occupies, as it advances, a constantly narrowing space, moves quicker and with more friction,—conditions more favorable to the generation of sound; but, continues the author, the movement of the air is so slow, especially in adults, that no sound is produced.

In *hurried* breathing, on the contrary, Mr. Sibson thinks that the inspired air generates sound by friction against the sides of the tubes, small and large; during rapid expiration sound is excited in like manner, but as the air passes from a larger into a smaller space, it is often a shade louder than it is during rapid inspiration. These sounds, it is added, are (contrary to what is observable in the others,) as loud over the lower part of the lung as over the upper portion which is nearest the larynx.

The pith of this argument is readily seized, and it is not without ingenuity. But independently of the *primâ facie* difficulty of admitting that phenomena perfectly identical in nature, and differing only in amount and intensity, can be generated in altogether different ways, there is an argument urged by Dr. Walshe in his work on the Chest, (p. 188,) against the laryngeal theory, as originally taught by M. Beau, which appears to us (for we have ascertained the accuracy of the *fact* on which Dr. Walshe's objection rests,) likewise fatal to Mr. Sibson's modified version. In commenting upon *continuousness* of the inspiratory and expiratory murmurs of each respiration as an important character of healthy pulmonary respiration, Dr. Walshe observes: "This character would of itself be sufficient to announce the lung as the part auscultcd; for it will be found that in proportion as auscultation is practised at a further point from the pulmonary parenchyma, so will the two sounds be more and more distinctly separated from each other by an appreciable interval of time, an interval which consequently attains its maximum opposite the larynx and upper part of the throat." Here the inference is clear: were the sounds, audible on the surface of the chest, merely the transmitted laryngeal murmurs, they should be separated from each other in each respiration by even a longer interval of time than that elapsing between the inspiratory and expiratory sounds opposite the larynx.

In noticing the long-known fact that the semi-circular measurement of the right side of the chest at the base of the lung exceeds, in adult persons, that on the left, the author ascribes the excess to the "liver being generally more bulky than the combined stomach and spleen." Now this explanation of the fact seems of questionable justness from the following circumstances: In children (as noticed by the author,) the two sides of the chest seldom differ; yet (as also remarked by Mr. Sibson,) the liver is of disproportionately large size in them. Mr. Sibson has not taken into consideration the influence of excess of muscular exertion on the right side in expanding that segment of the chest;—an influence, the reality of which cannot be doubted, if the statement of Dr. Walshe, (Op. cit. p. 21,) that "in left-handed persons the left side sometimes measures more, or more frequently the same as the right," be correct. It seems to us probable that both the influences referred to exist, but that the latter is the more powerful of the two.

Mr. Sibson attacks the habit of tight-lacing on two grounds: first, as destructive of the beauty of female form; secondly, as productive of shortness of breath, palpitation, indigestion, hysteria, and of the excess of deaths from consumption between the ages of fifteen and thirty among females as compared with males. The queen, we are told, "rains healthy influence on the domestic manners of the day," and from this and the interference of Sir James Clark in the case of the Princesses, a general change, it is hoped, will ensue in regard of the use of stays. As respects the first point, we confess we hold no very decided opinion; however dressed, whether the figure be rendered protuberant by *tournure*, or balloon-like, with copious folds of *crinoline*, flattened or squared, lengthened or shortened, compressed or expanded (and upon some one or other of these modes of proceeding, the women of all countries seem agreed,) the effect is very much the same, the real outline of the shape is concealed. Well-constructed women suffer, the ill-shaped of their sex gain, by these practices; the latter are in the majority, the practices will consequently prevail. The particular one to be adopted seems to us a matter of little moment; besides, *de gustibus non est disputandum.* But in regard of the writer's statement concerning the influence of stays in generating consumption, we must express the opinion—or we should say the fact—that such influence is, in the existing state of knowledge, mere matter of hypothesis, plausible hypothesis we deny not, but still hypothesis. And we cannot help regretting that Mr. Sibson did not provide himself with some description of proof, before he gave additional currency to the fashionable figment. "*Il y a des choses que tout le monde dit, parcequ'elles ont été dites une fois,*" said Montesquieu, and the outcry against stays seems to us an excellent illustration of the apophthegm. However, we have done on this matter, having already (Brit. and For. Med. Rev. Vol. XVI, p. 454, Oct. 1843,) when noticing the incredulity of M. Louis in the same direction, given utterance to our convictions.*

*Emphysema.* In describing the anatomical characters of emphysema, the author incidentally attributes the opinion that the disease is a "hypertrophous" one to Andral; this is an error, Andral (Anat. Pathologique, t. ii, p. 526,) in the most distinct manner refers the affection to atrophy of the tissue of the lung.

The slowness and difficulty of expiration in emphysema are well known; Mr. Sibson, with considerable plausibility ascribes the peculiarities to the fact of the communications of the dilated cells with the bronchial tubes being very small in comparison with the size of those cells.

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* Mr. Sibson, like those who have before him taught his thesis *more medico*, does no more than give a prosaic and less convincing version of the poetic expostulations of Mirabeau with his mistress (Lettres à Sophie; Lettre seizième,) on the evils of whalebone encasement. But the passionate lover was more reasonable than the *sang-froid* measurer of chests; he nowhere ascribes the generation of consumption to the use of stays, but limits himself to an energetic denunciation of their influence in producing hysteria, dyspnea, and similar states, much more demonstrably their real effects.

Prominence of the post-clavicular region has long been noted among the signs of emphysema. The author observes upon this point, that the summits of the lungs are raised, but not so much, proportionally, as the clavicles; the apex of the lung does not consequently rise so high above the clavicle, as it does in the healthy state.

Mr. Sibson is more precise in his account of the depression undergone by the diaphragm in this disease than his predecessors. It is carried so far downwards that the lower margins of the lungs lie in front behind the sixth intercostal space, or the seventh rib. The lower inner front margin of the right lung, and the lower border of the heart fall to behind, or even lower than the ensiform cartilage. The lungs at the back reach to just below the lower edge of the twelfth ribs. The deepest inspiration of health does not carry the lungs to these extreme limits, nor can they ever almost be reached by the utmost degree of artificial distension in the dead body.

Even in the most advanced forms of the affection, there always continues to be a space discoverable in the cardiac region, furnishing a dull sound; the distension of the right cavities of the organ, which appears constantly to attend the pulmonary malady when strongly marked, probably accounts for the persistency of the dull sound.

The heart being lowered, the vessels connected with it undergo depression also; for instance, the "innominata is lowered, and (the sternum being raised,) is entirely within the chest, behind the sternum, and quite out of the surgeon's reach." It may not then be a matter of indifference to the operating surgeon to understand the diagnosis of emphysema.

With respect to semicircular measurement, the right and left sides are said by Mr. Sibson to be "almost always equal." It would be more correct to say, as M. Woillez did many years since, that the average excess on the right side is much less in emphysematous than in healthy persons; at least this is what we have ourselves also found to be the truth. The fact proves by inference the greater frequency and amount of emphysema on the left than the right side.

Emphysematous patients, if in bed when attacked by a fit of dyspnea, frequently place themselves on their knees and elbows, leaning the head forwards on the pillow. In this position, remarks Mr. Sibson, "there is no occasion to lift up the thoracic walls on inspiration; the motion is backwards and forwards, like that of a battering ram, and the costal walls are slung by the serrati from the scapulæ, fixed by the rhomboidei. The action of the serrati, when exerted on the ribs, is not inspiratory, but expiratory; so that expiratory action is also assisted. The head is at the same time lowered; the origin of the scaleni and of the sterno-mastoidei are thrown forwards and fixed, and these muscles act with every advantage; their pull being direct, not oblique, none of their force is lost." This is a neat physiological analysis of a well-known symptomatic state.

Diminished intensity of transmission of the heart's sounds through the pulmonary tissue affected with emphysema, had been noticed by Dr.

Walshe as a sign of some value in that disease. Mr. Sibson's inquiries, confirmatory of those of the author just named, are original in having been directed to the distinction of the effects of inspiration and expiration on the cardiac sounds. On a deep *inspiration*, he says, the sounds are lowered, with the region of the heart's dulness and impulse, into the epigastrium. The systolic "impulsive" sound is louder and more ringing than in the tranquil state, probably in consequence of the falling in of the sterno-costal walls over the heart, while that organ advances. The diastolic sound Mr. Sibson has discovered to be generally louder, sharper, and more ringing than in the natural state. Both sounds are only audible over and in the immediate contiguity of the seat of the heart's dulness. On a deep *expiration* the "impulsive" sounds are loud and ringing, and heard more extensively than during inspiration. It will be cbserved, however, that these variations in the intensity of the cardiac sounds, dependent on inspiration and expiration, cannot be considered in anywise characteristic of emphysema; differences, the same in essential character, exist in health.

Mr. Sibson has found the frequency of respiration generally natural, or even below the healthy standard if there be no bronchitis, and the patient be in a state of repose. According to his experience the pulse is almost always slow in males, even when the respiration (from attending bronchitis) is quick ; it varies from forty to seventy in a minute. In the female the pulse is quicker, varying from eighty to ninety ; the breath also is, relatively to the pulse, quicker than in males. These differences in the female sex are ascribed to the influence of tight-lacing.

Mr. Sibson expatiates on the causes of emphysema. At the head of the list he places bronchitis ; Laennec had done so before him. M. Laennec's doctrine has been shown by Louis and others to be irreconcileable with facts, and Mr. Sibson's pages contain no novelty in its support. Next follow diseases of the heart, frequent exposure to foul air, repeated excessive exertion, such as playing on wind-instruments, &c. ; the grounds for ascribing the affection to these agencies are merely theoretical, and hence undeserving of notice ; why did the idea not occur to Mr. Sibson, that it might be well to show that wind-instrument players were actually more subject than other persons to the disease. For our parts we doubt the fact, and who can gainsay us? Again : "affections of the stomach and liver, caused as they *generally* are by a deranged condition of the skin, *frequently* give rise to repeated excessive attempts at a deep inspiration and induce emphysema!" Fortunately for Mr. Sibson's reputation, but little matter of this purely fanciful and really empty character is found to sully his essay.

*Bronchitis.* Mr. Sibson is likewise a micrographer. He details the microscopic changes in bronchitis, to the consideration of which disease we now bring our readers. "The larger bronchial tubes were covered on their inner walls with irregular elevations, composed entirely of capillary vessels. The vessels are large and very irregular in caliber, the same vessel becoming suddenly two or three times its previous size, and then shrinking suddenly to a bore even less than it had at the first start. Some vessels were twisted spirally ; others formed loops, rising forward ; and between others irregular reticulations were formed by capillaries of ever-varying, though small, size. Covering one portion of this minutely injected tissue, there was an opalescent, soft, feebly-organized structure, floating here and there in filamentous ruggedness; under the microscope this structure was seen to consist of parallel bundles of exceedingly fine lines, each line being many times finer than a blood-globule. The enlarged looped blood-vessels played in a thick, soft, smooth, nearly translucent membrane. The vessels did not generally penetrate quite to the surface of this membrane; here and there one perforated it, and was truncated."

Diseases where "one lung and one side of the chest are amplified," next engage Mr. Sibson's attention; these diseases are spoken of as pneumonia, pleuritis, and diffused tubercular consolidation. In diffused enlargement from any one of them, the organ, or portion of it, affected, "puts on the same form that it acquires on a deep inspiration."

The explanation of dilatation in such diseases has been usually mechanical—from the first observations of Broussais on the subject downwards. Mr. Sibson, on the contrary, holds that "when any one of the diseases in question occur, especially in an acutely inflamed stage, the muscles of inspiration act to expand the chest over the diseased part, and to *withdraw from that part injurious pressure.* The dilatation from inspiration so effected is almost or altogether permanent, to stave off from the inflamed parts the injury that perpetual friction would cause." We confess we have no little difficulty in conceiving how a limited portion of the walls of the chest can maintain itself persistently distended, while the subjacent part of the lung still undergoes any degree of respiratory change of bulk; the thing indeed seems physically impossible.

*Pneumonia.* The anatomy of pneumonia is minutely described, and the following general statement of the anatomical stages of the disease deduced.

> "First stage. The cell-walls are unusually minutely injected; the large filamentous and the small webbed interlacing capillaries are irregularly large and tortuous. Second. The interlacing capillaries are either irregularly large and tortuous, and end abruptly after a bulge, being clogged by secretion; or else they are unusually small and gradually fine off to a point. Third. There are no capillaries whatever injected, or very few; the texture of the air-cells is thickened. The injected walls of the pulmonary artery, and of the large bronchial tubes, run for a short distance into the diseased structure, and then end abruptly. Fourth. There are no injected capillaries, and granules occupy the cells. Fifth. When there is hepatization, the pulmonary arteries are obliterated, forming white tortuous-looking, ramifying cords. The pulmonary veins are collapsed. The cells are distended with hard, reddish-brown, friable structure. The cells themselves have not now the smooth defined character, under high microscopic powers, that they had; their walls are shaggy; the very fine filamentous texture, seen in the previous stage, becomes less definite, and is, as it were, apparently in strings of infinitely small beads or cells. Sixth. The stage of splenization, of breaking up of the cell-structure, of complete softening and disorganization of the diffused granular structure, and of the gradual disappearance of the blocked up capillaries. The obliterated pulmonary arteries collapse and remain in the form of tendinous filaments."

There is much that is correct and valuable in this description; but there is an important omission, not a syllable is said of the condition of the inter-cell structure of the organ, the presence of exudation within its meshes, &c., so that actually this structure would appear in the mind of the author to be (unless as regards the vessels permeating it, and the changes going forward in the adjacent cells,) unconnected with and uninterested in the phenomena of pneumonia.

The next page startles us with the announcement that Mr. Sibson has "observed" pneumonia to end in universal tuberculous infiltration, strengthened as the averment is by the statement that this is "by no means an unusual result." We do not contest Mr. Sibson's having in some rare instances observed the termination in question; accurate physicians on the continent and here have done so also, but we should delight to be informed how or when he has ascertained that such termination is a common one. Meanwhile we refer him to M. Louis's work on 'Phthisis,' (2ème edition, p. 595. Paris, 1843,) for a series of facts collected from his own observations, and that of the patient and laborious M. Grisolle, demonstrating the excessive rarity of the connexion now spoken of between pneumonia and phthisis.

Cases of pneumonia are occasionally observed, as has long been known, in which there is complete absence of respiratory murmurs, rhonchus, and vocal resonance—a state assimilating such cases, in respect of physical signs, to extensive pleuritic effusion. The fact is indubitable; the difficulty consists in explaining it on the admitted doctrines of transmission of sound through solid lung from the larger bronchi. Mr. Sibson simply says, (like those who have preceded him,) "the bronchi are no longer open tubes; the respiratory sounds and the vocal resonance are no longer conducted by them to the surface." This is obviously unsatisfactory. Skoda makes much of such cases. It is matter of belief, and we think not incorrectly so, that suppuration leading to elimination of pus through the bronchi (qy. hepatization, with breaking up of structure) is announced by a variety of humid rhonchus, sub-crepitant, mucous, gurgling, as the case may be. Mr. Sibson goes further than this: "if an empty cavity is formed there is cavernous respiration, and the modification of vocal resonance produced by the accompanying hissing, cavernous respiration." We cannot believe this *possible* in connexion with pneumonia, (Mr. Sibson has obviously never *observed* it;) and such diagnosis of pneumonic abscess seems to us likely to remain a matter of paper, and not clinical, acquirement.

There is nothing else new in Mr. Sibson's account of this auscultatory phenomena of pneumonia: he sides with those who consider the respiratory murmurs altered in character before crepitation becomes audible, and places the seat of production of the crepitant rhonchus in the interior of the air-cells.

*Pleurisy.* Mr. Sibson, describing the physical condition existing in pleuritis, remarks that the "walls of the chest are drawn away from the inflamed lung-surface; that of course that surface follows; but that the *pressure* exerted by the walls of the chest is *diminished.*" We must beg to differ from the author here; the proposition just quoted makes it matter of inference that in the healthy state reciprocal pressure of some amount exists between the lungs and thoracic parietes—a notion as inadmissible through observation as it is opposed to the physical principles regulating the mutual play of the lungs and their containing case.

That pleuritis is more frequent as an accompaniment to other diseases than as a simple affection, is a fact, in the announcement of which Mr. Sibson is less original than in the statement that the character of the secondary pleuritis "closely resembles, and is usually, in general principles, identical with that of the primary *exciting* affection." In respect of phthisical pleurisy, the position in question has, it is said, been long considered established; the points upon which the similarity is avowed to rest in regard of other diseases are microscopical, to our minds not very satisfactory, and at all events must be sought for in the essay itself.

Mr. Sibson pronounces pleuritis to be a very frequent consequence of emphysema. It has been on the contrary numerically proved by M. Louis (Mémoires de la Société Médicale d'Observation, t. i,) that pleuritis is not more frequent in persons dying emphysematous than in those free from this affection; and further, that when such pleuritis is present it cannot legitimately be considered an effect of the diseased state of the vesicles.

"The affected side is not so much larger than the sound side in pleuritis as in pneumonia:" here is a statement which might puzzle the author's readers very considerably. It is meant, of course, to refer to cases of pleurisy in which effusion has not yet supervened.

The following contrast is drawn between the distension produced by pneumonia and by pleuritic effusion. We transcribe the passage, though we must affirm the author's tendency is rather to exaggerate the amount of dilatation actually witnessed in practice as a consequence of parenchymatous inflammation.

> "In distension of the chest from pleuritic effusion, the intercostal spaces are on a level with the ribs. In pneumonia, the distension of the chest and the displacement of the viscera are identical with the distension and displacement from a deep inspiration. In pleuritic effusion of fluid or air the distension is in every direction; the bulging does not take on the form of the lungs, but it presents a general somewhat globular distension. The superior ribs are separated from each other; in pneumonia they approach. [?] In pleuritic effusion, the mediastinum and heart are thrust over to the opposite side; in pneumonia, the displacement of the mediastinum and heart is comparatively slight. In pleuritic effusion of the right side, the lower edge of the liver is pushed down considerably below the eleventh rib; the whole liver, in extreme cases, is thrust down from behind the cartilages of the ribs. In pneumonia, the lower portions of the liver alone protrude beyond the cartilages, the bulk of the organ being still behind them."

Percussion over a pleuritic lung is, before effusion occurs, usually quite as resonant as on the healthy side; this is the opinion held by writers in general. But Mr. Sibson has "*observed* it to be now *more resonant.*" We should have wished to be informed how often he has succeeded in ascertaining this, and above all, how he satisfied himself that the state of the other lung did not lead him into error. For our own parts, we have much less difficulty in believing (granting this fact to have been actually observed), that greater comparative clearness of sound over an inflamed pleura arose from the existence of pre-existing slight consolidation on the *other* side, than that it arose "from increased volume of the lung on the pleuritic side, owing to the universal expansion of that side, compensating [but it does more than *compensate*, according to the author,] for the dulness that the comparatively slight consolidation over that lung would occasion." It is to be noted that here is involved not a mere nicity of diagnosis, but to a certain extent a matter of practical import—the distinction of pneumonia and pleurisy at a very early stage.

During the stage of plastic exudation (before the occurrence of liquid effusion), the pectoral resonance is, if anything, "louder over the pleuritic lung;" we should infinitely prefer to find Mr. Sibson adding the number of times he has actually observed this, rather than giving the statement a quasi authenticity and force by the argument, "*as* that lung is the larger, the volume of the vibrating mass of lung is increased." On our own side, though we have certainly never observed the alleged increase, we have no desire to question its possible occurrence, for we cannot affirm we have specially examined the point.

Mr. Sibson ventures on a new explanation of the variety of vocal resonance, known as œgophony. "The pectoral resonance," he says, "is accompanied by the whispering friction-sound; the two sounds are heard together, just as the drone and the notes of the bagpipe are; the person seems to be whispering and speaking into the ear at the same time; a peculiar tremulous or bleating vibration is produced, in fact, œgophony." Objections might be made to this mode of explaining the peculiar character of œgophonic resonance, but we nevertheless consider it worthy of serious consideration.

It has never fallen to Mr. Sibson's lot to hear friction-sound satisfactorily in emphysema; he considers it disputable whether the hissing noise over the greatly-dilated marginal cells be due to friction-sound or to the entrance of air through narrow openings into large sacs, and inclines to refer it to the former. The opinion that friction-sound might be generated in emphysema, independently of pleuritic exudation, was originally put forth by Laennec, rejected by the majority of subsequent observers, and revived, if we mistake not, in a modified form by Dr. Walshe. It appears to us, with Mr. Sibson, that the point is one still debateable; but as we have more than once referred to it in these pages, we shall at present not delay longer in its consideration.

Phthisis "never" goes through its stages without abundant pleuritis, according to Mr. Sibson. The words "never" and "always" should be banished from the vocabulary of pathology. The truth is, in regard of this point, that phthisis does run to the last without the formation of adhesions (and without these the diagnosis cannot be regarded as scientifically certain), in one of every hundred cases, or thereabouts, as proved by M. Louis (Op. cit. p. 42.) The writer adds, that very often the lung that is least diseased gives evidence of pleuritis by a modified friction-sound over the upper part of the chest, which sound is often styled puerile respiration, and closely resembles this. We believe, with Mr. Sibson that friction-sounds are oftener heard at the apices of tuberculous lungs than either the admitted theory of the generation of such sounds, or the statements of authors would lead us to suppose; but we question the fact of such sounds being confounded with peurile respiration.

*Phthisis.* A new section introduces us to diseases in which the bulk of the affected lung is lessened. At the head of the list (or, indeed, rather constituting here the only illustration of such lessened bulk) figures phthisis. Now it will be remembered that tuberculous infiltration was one of the conditions set down by Mr. Sibson as productive of enlargement of the lung—a statement we purposely forbore commenting on at the time, much as we were surprised at its appearance. It would now appear that Mr. Sibson has only *imagined* the enlargement in question; for he states in the present place "when phthisis is so far advanced as to be recognized, the affected part of the lung is lessened." No doubt it is, and, as clearly as logic is logic, Mr. Sibson forfeits his character for soundness by setting down fancies concerning what exists at a period when neither he nor any one else can prove the nature of the complex phenomena going forward. We have an obscure memory of having read somewhere else this opinion, that at first the lung undergoes increase of bulk in phthisis, but where or by whom enunciated we cannot call to mind. It is to be observed that cases where the entire lung is consolidated, and where inflammation exists, and actual inflammatory products are present, are not justly to be included in the category of common phthisis; of enlargement under such conditions Mr. Sibson has figured an example.

Mr. Sibson places the seat of development of tuberculous matter in every one of the tissues of the lung. This is in consonance certainly with reason, and, we are satisfied, with observation. He adds another to the multitude of microscopical accounts of tubercle which have of late years besieged pathology,—it appears well considered, and to be founded on careful observation; but we should be glad to know how the author ascertained, satisfactorily, the hollow or cell character of "almost point-like" bodies scattered in numbers over the surface of certain cells of the $\frac{1}{1000}$th of an inch in diameter, and even of others seated upon the largest of these "secondary cells." An enumeration of the points of analogy and difference between tuberculous disease and pneumonia follows the description of the microscopical characters of the former; from this comparison the following is the general inference: "There is then a range of analogies, but a vital difference between the two diseases; they both infest the same structures; they both work out their mission by parallel steps; but the steps only resemble, they are not alike. They are alike in this: each requires for its development the assistance of capillaries; in each new capillaries are formed, when there are no old vessels to give the required aid; in each, an inflammatory action is necessarily involved, especially in the pulmonary artery, the bronchial tubes, and the pleura.

In phthisis the least diseased lung is the larger of the two: Mr. Sibson appears to think (as already mentioned) that it is only generally so, and not in all instances. His mode of accounting for the excess of size on the comparatively sound side is sufficiently curious: "Active pleuritis, without adhesions, exists in the early stage; the walls of the pulmonary artery and the bronchial tubes are inflamed, and the air-cells are infiltrated in patches, probably inflamed.......... The pneumonia and pleuritic parallel conditions lead to an undue permanent expansion of the lung......... I think it reasonable to infer that the walls of the chest are more expanded over the seat of tuberculous disease and tuberculous pleuritis, in the very early stage than they are over the healthy lung." This is an excellent example of hypothetical reasoning, founded on a postulate (the existence of pleuritis) against the admission of which common experience protests.

Mr. Sibson affirms that there are "many" cases of phthisis, where the tuberculous matter does not extend to the surface of the lung, and where cavities have not formed, which can only be detected by the diminished play and bulk of the affected organ—cases in which percussion, auscultation, and the general symptoms convey no information.

We are not disposed to make light of the diagnostic value of defective motion and depression of the walls of the thorax in phthisis; but we confess we have yet to meet with a case in which these were sufficiently marked to justify the observer in pronouncing tubercle to be present—the other modes of investigation referred to failing to throw any light on the nature of the disease.

An inquiry is next made as to the cause of the bulk of the affected portion of tuberculous lung diminishing before the stage of softening and evacuation of the morbid structure. The diminution is referred to the non-expansion of the unaffected air-cells; and we are further told that, "wherever inspiration would injure an affected lung or portion of a lung, or cause suffering to the adjoining diaphragm, costal walls, or parts contiguous to those walls, then breathing is locally suspended, and that lung is in a state of repose." That the above explanation is incorrect as a matter of fact, follows obviously from the observations of several pathological anatomists, who have shown that a special form of emphysematous distension (instead of "non-expansion,") is extremely common in the cells adjoining tuberculous deposit, and that other conditions (to which we can do no more than allude here,) are the real agents in effecting the diminution of bulk. Secondly, as to the suspension of breathing, which is presumed to lead to the permanent non-expansion in the manner stated, we appeal to any one in the habit of seeing thoracic disease, whether they believe in its reality.

Mr. Sibson maintains that the volume of the chest does not necessarily lessen *step by step* in the formation of cavities; this we know to be correct. But we have never observed a case justifying the statement that, "on the contrary, the advance of the disease, the formation of new tuberculous and puriform matter, often *adds to the bulk*." That such is not the usual opinion, we need scarcely inform the reader; and it appears as well to let him know that Mr. Sibson adduces no decided evidence of the accuracy of the new doctrine.

When a cavity is formed, where a solid block of tubercle or an accumulation of puriform fluid previously had place, the volume of the lung lessens, and the respiratory play of the superjacent walls is increased.

The author has found the heart commonly, but by no means invariably, lessened in bulk when the lungs have undergone a similar change. Nevertheless, an unusual portion of the cardiac surface comes in contact with the walls of the chest. There is nothing new in the statement, that the heart's impulse may sometimes be felt so high as the second intercostal space.

We must pronounce Mr. Sibson's attempt to describe the particular characters of phthisical, as distinguished from other kinds of dyspnea, to be a failure; but, in extenuation of his want of success, we feel it just to add, that accurate verbal description seems to us an impossibility. It is certainly not true, as a general proposition, that the shortness of inspiration in consumptive persons depends on the expansion of the chest "being suddenly arrested by a stitch in the side—a sudden muscular pain:" this is the exception, not the rule.

In the early stages of phthisis, the author detects a comparative dulness of sound under percussion, over the affected part of the lung. This dulness, he does not doubt, depends on turgescence of the capillaries preceding the earliest grayish infiltration; after a time (that is, when tubercles are actually formed, but scattered and not numerous), it disappears: hence "the lung, in the incipient stages, will be less resonant than in the more advanced stages." *Credat Judæus*, might, on first sight, appear to be the only fitting comment on this announcement. It is not, however, absolutely devoid of some claim to attention. In the first place, it is no doubt conceivable that intense congestion of a portion of lung shall affect the resonance under percussion to a greater degree than a few scattered tubercles, especially as we know the most skilful persons admit the impossibility of detecting any change in the resonance, as a constant result of the latter condition. But such congestion is not the anatomical deviation from health Mr. Sibson has in view; and even if it were, the task would remain for him of proving its occurrence—not its uniform occurrence, (for he could not demonstrate what does not exist,) but even that it precedes the formation of tubercle in a moderately large fraction of cases. The idea of his "capillary turgescence" producing an appreciable degree of dulness, seems to us in the last degree problematical. Again, observe the contradictions in which the author involves himself: he affirms, as we have seen in a previous page, that accumulation of tuberculous matter may exist to such extent as to cause diminution of the bulk of the organ, with impeded motion of the thoracic walls, and yet not affect the clearness of the sound under percussion; in the present passage he maintains that turgescence of the capillaries of a limited extent of substance produces dulness of sound. Is it in reason to be conceded, that such capillary injection and turgescence can be detected by fingers and ears which fail to discover an amount of tuberculous formation producing the changes in the lungs and parietes referred to? Lastly, as the truest test of the point, we would ask Mr. Sibson how often he has observed the phenomenon he describes, and how he assured himself in each instance that no accidental circumstance may have been present to modify the physical signs.

"Vocal resonance," says Mr. Sibson, "is in general unusually feeble over the lessened, partially condensed, tuberculous lung, prior to the formation of a cavity." Here is a flat contradiction of accepted doctrine.

The causes and general history of the first symptoms in phthisis all tend to prove, in Mr. Sibson's mind, that it is essentially a disease involving inflammatory action. No new proof of this notion (which has been refuted even in this Journal, *usque ad nauseam* almost) is adduced by the author; the statement does not consequently call for particular examination.

Mr. Sibson suggests that the sudden evacuations of blood from the lungs which are so common in the later stages of consumption, "are doubtless due to softening of the walls of tuberculous cavities, which are vividly supplied by blood-vessels." He "doubts not that the walls of the pulmonary artery often give way by the onward spread of the degenerative structure." Of these two modes of accounting for the symptom in question, the first is open to objection on the ground of the well-known fact that copious hemoptysis is far from unfrequent in the earliest period of the disease, and is comparatively rare at the close of existence. (See Louis, Op. cit. p. 197.) The other is utterly unsupported by observation; it is matter of notoriety, as admitted by Mr. Sibson himself, that the detection of an open vessel is singularly rare.

As an illustration of the author's remarks upon "other diseases in which the lungs are wholly or partially diminished," we may condense his account of "diminution of the bulk of the lungs, narrowing of the chest, and elevation of the diaphragm from frequent irritable cough:" the statements made are at least worthy of being submitted to the clinical test. Many persons whose lungs are far from disease are subject to distressing cough, says Mr. Sibson, from the slightest exposure to cold, or from the influence of a full meal or an empty state of the stomach. An attempt to take a full breath even will bring on an attack of coughing. The result is a gradual diminution of the bulk of the lungs; the chest becomes narrowed, the diaphragm is usually raised, and the abdominal organs become disproportionately large.

The heart in the state of health forms the next subject examined in the essay. By inserting a graduated cone into the vessels or outlets of the heart, the author ascertained their respective diameters. He also injected the cavities of the organ with plaster of Paris, cutting out the casts formed by the plaster when hardened, dipping them into water and ascertaining how much water they severally displaced. He did not arrive at a perfectly accurate estimate of the relative capacities; this was to be expected,—experiments of the same kind made by Portal, Legallois, and Meckel, with water and mercury, he might have known utterly failed in leading to a definite result. He considers the heart of a girl, aged fourteen, to furnish a fair general criterion of the comparative capacities in question; and in this instance the casts of the right and left ventricles displaced the same quantity of water. In Meckel's experiments, on the contrary, the right ventricle was always found to contain much more mercury than the left, varying between *three times* the amount and an eighth of the amount.

Mr. Sibson has observed the motion of the exposed heart of asses poisoned with wourali,—artificial respiration being kept up in the ordinary way. The account given is interesting, carefully set down, and worthy of perusal in the original; we cannot afford it space.

In enumerating the effects of arresting the flow of blood through the pulmonary artery in these animals, the author states that as soon as eight or nine contractions of the heart had taken place after pressure had been applied to the vessel, the right auricle appeared to be quite empty, the ventricle swollen but not distended, and "regurgitation was evidently permitted." The latter point is of obvious interest in its application to cases of disease in which pressure may bear specially on the pulmonary artery, while the tricuspid valve continues, in respect of its *anatomical* state, capable of performing correctly its ordinary functions.

The following account of the change of seat of the impulse of the heart induced by change of posture of the individual agrees so closely with what we have ourselves observed, that although it is founded on the examination of but one adult male, we transcribe it. When this "man lay on his back, the impulse of the apex was felt between the fourth and fifth ribs, just below the nipple; the fifth rib was slightly heaved up. When he lay on the left side, the apex was felt beating strongly between the fifth and sixth ribs, an inch or more to the left of the nipple. When on the right side, the impulse of the apex could not be felt; there was gentle heaving of the lower part of the sternum. When he lay on his abdomen, the apex was felt to beat over the third and fourth intercostal spaces. When he sat up, the apex descended from the fourth to the fifth intercostal space."

In distension of the pericardium with serous fluid, the sac acquires a pyramidal form, the apex corresponding to the upper part of the sternum. The high elevation of the dulness produced by this cause distinguishes it from that significant of hypertrophy of the heart, which, be it ever so marked, does not give rise to dull sound on percussion in so elevated a situation as that mentioned. These facts, long known, have been well illustrated by Mr. Sibson's experimental injection of fluid into the pericardial sac. The loss of the peaked form in the dull sounding part is one of the earliest signs of diminution of the effused liquid; with the further advance of absorption, the right boundary draws nearer and nearer to the sternum; the left border approaches towards the middle line, and the lowest dull sounding part becomes resonant from the stomach being allowed to resume its natural position. Such is the series of changes indicative of the most favorable termination of the disease attended with pericardial effusion. But if the upper border, after it has gradually descended with a peaked form, become stationary above the natural upper limit of cardiac dulness and lose the peaked form; if the right border become stationary, while the left passes further and further outwards, the lower border not regaining completely its natural elevation, the supervention of hypertrophy may be considered the cause of the deviation from the previously described series of changes. Again, if the upper boundary, after descending for a time, become stationary, lose the peaked form, and then again ascend; if the extent of dulness increase towards the left side of the chest, while the right boundary of the dull sound, after having returned inwards, retrogrades, and the lower boundary do not resume its natural position, then we are justified in concluding that enlargement of the heart with pericardial adhesions has taken place. Mr. Sibson exhibits these various facts to the eye in some diagrams of extreme interest.

That accumulation of fluid in the pericardium (especially when the result of inflammatory action) leads to visible bulging of the pericardial region, is a fact with which M. Louis long since made pathologists acquainted. But that the local prominence, thus induced, bears particularly on the second costal cartilage, is a statement of Mr. Sibson's, and, to us at least, new. This writer appears to regard the bulging in cases of pericarditis as the effect of accumulation of fluid only; but it has of late been contended, with no small plausibility, that the alteration of shape sets in even before fluid has been thrown out.

Mr. Sibson points out certain peculiarities of the precordial prominence, which seem to distinguish it as the result of hypertrophy, with pericardial adhesions, rather than of simple hypertrophy alone. "If the heart be enlarged, with adhesions," he says, "the lower two thirds of the sternum continue to protrude; the separation of the costal cartilages and ribs from each other rather increases; the sixth, seventh and eighth ribs project even to the left side; the whole of the lower left ribs are raised, and thrown outwards; the whole of the left side projects; and the sixth, seventh, and eighth conjoint cartilages to the side of the xyphoid cartilages, are much raised." On the other hand, in cases of hypertrophy alone, simple bulging over the third, fourth, fifth, sixth, and seventh costal cartilages is the only modification of external form to be detected.

In the early stages of pericarditis, when the ordinary friction occurring in the sac is not sufficient to produce any variety of rubbing sound, Mr. Sibson has found such sound may be caused by pressing gently on the costal cartilages or sternum with the head of the stethoscope; this pressure, he presumes (and the presumption does not appear to us free from difficulty,) displaces "any fluid that may be interposed between the costal walls and the surface of the heart," and so ensures close contact of the apposed surfaces. In order to apply this pressure with less uneasiness to the patient, he inserts a thin plate of wood (the head of a chip pill-box,) into the mouth of the bell of the stethoscope. Here is a hint which may perhaps be made useful in practice.

When considerable effusion of serum takes place into the pericardium, the heart is raised and its bulk lessened; the friction-sounds are heard a little higher in the chest under these circumstances, and are not audible over the lower part of the sternum or below the fifth rib. With the diminution of the fluid, the site in which the sounds are audible becomes lowered. Inspiration usually draws down the heart, and lowers and renders narrower the seat of friction-sounds; sometimes it prevents them altogether from being heard.

*Hypertrophy without pericardial adhesions.* The descent of the heart which is known to take place in this disease, should always be considered in connexion with the altered position of the various cardiac orifices, and of the great vessels which, as a matter of necessity, it entails. The precise bearings of the valves to each other cannot be stated; it may be said that they usually retain their relative positions to each other, but this varies with the amount of general displacement downwards. If the left ventricle be greatly enlarged, the mitral valve is pushed considerably to the left.

It is a mistake to suppose that the extent of cardiac dulness affords a precise measure of the amount of enlargement of the heart, and this because the lungs, which are often emphysematous, overlap the organ to an unusual extent. Forcible percussion even will not always protect the observer from this source of error. The extent to which the lower border of the cardiac dull sound is brought downwards, furnishes a better test of the amount of hypertrophy, especially in males; but even this is fallacious in certain cases.

If the right ventricle be enlarged and its walls thickened, the lower half of the sternum, the ensiform cartilage, and the left costal cartilages, from the third or fourth to the seventh, are, according to Mr. Sibson, heaved gently and steadily forwards, "not by a pointed impulse, but by a diffused steady advance;" the "protruded walls usually fall back quickly towards the end of the systole." Such a state of things as this, we can have no hesitation in affirming, must, to say the least, be singularly rare.

*Pericardial adhesions.* Mr. Sibson has seen four loosely-adherent hearts, of natural size, free from valvular disease; the individuals to whom they belonged having evinced no signs of cardiac disease, and succumbed to affections totally unconnected with the heart.

If the adhesions be dense, strong, and contracted, and unaccompanied by valvular disease, they may lessen the bulk of the heart's cavities, and impede their expansion. The shorter the adhesions, the more prejudicial must they prove. The costo-sternal walls, are dragged back as the ventricles contract, by some of that force which should be expended on circulating the blood; the cavities are not perfectly emptied, the columnæ carneæ prevented from contracting efficiently, and hence regurgitation will ensue in some instances, where actual disease of the valves does not exist.

The extent of the heart's superficial dulness is very great; its margin rises as high as the third costal cartilage, descends below the middle of the ensiform cartilage, extends about a rib's breadth beyond the right border of the sternum, while its left boundary is seated almost close upon the outer wall of the chest. Deep inspiration has little of the lowering effect on the position of the heart's dulness, which it is observed to exercise in cases of simple hypertrophy.

The following description of the impulse of the heart in such cases, accords, with trivial exceptions, with what we noticed in an individual recently submitted to our observation: "The impulse is felt over the entire region of pericardial dulness; that of the apex is extensive, strong, and thrusting, and is perceived very far over to the left side; in one case, the apex rose at the beginning, and fell back during the continuance of the systole. The sternum, costal cartilage, and xyphoid cartilage are heaved forward firmly and steadily at the beginning of the systole; and during its continuance those parts fall back steadily and quickly, coinciding with the mode of systolic contraction of the right ventricle. In some cases, the sternum and costal cartilages spring forward with a jerk during the diastole." In some instances, the fifth and sixth ribs and costal cartilages are drawn to the left during each systole, being dragged, as the author naturally supposes, after the heart, during its movements from right to left, by the adhesions.

When the pericardial adhesions are long and loose, and the heart of natural size and free from valvular disease, no physical sign announces their presence; and we have already seen that, in respect of local function or of the general health of the individual, they are perfectly innocuous.

Mr. Sibson "refers to his diagrams with satisfaction and confidence;" and he is fully justified in doing so. They supply the most convincing proof of his industry, and give a value to his descriptions which can only be fully appreciated by those who study his paper. The amount of information contained in the essay is not to be estimated by the notice we have now concluded: the construction and nature of the paper rendered general condensation of its contents a matter of impossibility, and we have consequently been obliged to pitch upon, rather than select, certain passages for comment, calculated to give a general notion of the nature and scope of Mr. Sibson's researches. If we shall have induced any of our readers to undertake the careful study of these in the original, the motive we had in view will have been fully secured.

It cannot fail to be observed, even from the analysis we have given, that the title of Mr. Sibson's paper conveys a very imperfect idea of its contents. Were we to be as critical in regard to style, as we have been in regard to matter, we could also point out some literary deficiencies; these are, however, but the dross, which cannot conceal the sterling gold from those willing to look for it.

## Art. XII.

*Akesios. Blicke in die ethischen Beziehungen der Medicin.* Von K. F. H. Marx.—*Göttingen*, 1844.

*Akesius; a Glance into the Ethical Relations of Medicine.* By K. F. H. Marx.—*Göttingen*, 1844. 12mo, pp. 152.

Akesius, the healer, according to Sprengel, was one of the names given to the demigod, known to the Egyptians as Harpocrates. His birth at the winter solstice was symbolical of the powerlessness of the sun at mid-winter; but indicated also the hope of more genial warmth with its return along the ecliptic. To the sick he was at once the emblem of their debility, and of their hope of restoration to health. He was represented also with his finger on his lips, to symbolize that sacred secresy which the initiated were bound to maintain respecting the mysteries of their calling.

Professor Marx, in terming his little volume Akesios, refers only to the first-mentioned symbol of the god, for he does not treat of the means or methods of curing disease. He has chosen for his theme (to use his own words) that which springs from the heart and not from the head; it is the morals, the ethics, the spiritualism of medical theory and practice of which he professes to discourse.

The fundamental principles of medical ethics can be none other than the fundamental principles of Christianity, namely, an unqualified love and reverence of God, and an unselfish love and honour of humanity. With these principles, guiding alike his scientific inquiries and his daily duties, the medical practitioner has scope and opportunities for happiness presented to him equalled by those of few other pursuits, and surpassed by none. We doubt much if even the clerical profession offers a wider field for doing good, or more numerous opportunities for high communion with God. The object of the physician's professional studies is man; and man he studies through all nature. Thus, indeed, it has happened that medicine has been the prolific root of all the varied branches of natural philosophy, and that physicians have ever been the most successful and celebrated cultivators of the accessory sciences. We could name men now living and distinguished in almost every branch of human knowledge whose primary education was medical.

The tendency, in fact, of this wide range of mental labour has necessarily been to elevate and give a uniform development to the faculties of the physician. It has raised him to an Alpine height of intellectual vision, from whence he can look down on the details of this gigantic machine of the universe, and see in incessant activity that wonderful system of poises and counterpoises by which the MASTER-MIND regulates his own creations. From the same intellectual eminence he can also survey the battle-field of the excellencies and infirmities of poor humanity. How easily the observant eye of the physician penetrates the veil of modesty or vanity man throws over his acts and motives during sickness! He witnesses within one short day heroic self-denial, surpassing fortitude, utter abasement, the most servile fear, and pride grasping its ragged mantle of appearances, and vainly attempting to hide its ulcers and deformities, even to that last solemn moment when time joins eternity.

The moral results of medical studies are not less than the merely intellectual. They appear, however, in the physician rather as the smooth, placid, ever-flowing stream of active benevolence, than as a high-wrought enthusiasm or daring undertakings. A thorough knowledge of his own imperfections and infirmities checks the one and forbids the other; while a deep conviction of the power of truth continually cheers him to seek and use her as the means of honouring God and perfecting humanity.

Embued with such sentiments, the physician cannot but be impressed with the dignity of his pursuits; he cannot conceal from himself that his mission is to ameliorate the "primal curse;" that he is the special messenger of Providence to suffering man; prolonging his days, relieving his sufferings, ministering to his happiness. Some practitioners may see and appreciate all this less distinctly than others, but there are few who will not feel in some degree that we are expressing sentiments in harmony with their own.

General and medical literature have in all ages presented proof how these sentiments have impressed thinking minds. Homer terms Machaon an *ισοθεος φῶς*, a divine light. Cicero expressed the same sentiment more distinctly: "In nulla re propius homines accedunt ad deos, quam salutem hominibus dando." It is impossible to peruse the ethical portions of the Hippocratic writings without feeling their moral grandeur. In the book 'De Medico,' it is asserted that the truly philosophic physician is godlike; using the identical term (*ισοθεος*,) applied by Homer to Machaon, and adding, "that indeed he differs little from the gods." The list of moral qualities given as requisite to the right formation of the medical character, exhibits a purity of moral feeling and sentiment unsurpassed by any modern author. The notions respecting the dignity of the medical art were carried even to a ridiculous excess, for Menecrates of Syracuse maintained that practitioners of it ought actually to be worshipped as gods. Philip of Macedon, to punish this presumption, took Menecrates at his word; and, instead of feeding him with earthly food, offered him incense. Further corroboration, if that were necessary, of the elevated sentiments respecting medicine and its professors current in ancient Greece, is given by the correspondence of Hippocrates; and this whether that correspondence be genuine or not. Artaxerxes is represented as offering to Hippocrates (through Pœtus, prefect of the Hellespont,) as much gold as he may desire, and the highest honours of the Persian nobility, in return for his services as physician-general to the Persian army, then devastated by a pestilential disease. Hippocrates, in reply, contemns the proferred riches and honours, and in spirited terms refuses to assist the enemies of his country. To his friend Demetrius he writes, "The king of the Persians called me to him, not knowing that moral precepts had greater weight with me than gold." And when he was sent for by the citizens of Abdera to the relief of Democritus, in his reply to their letter, he repeats his principles of ethics: "Riches," he says, "do not consist in stores of gold, but in the practice of virtue." In the same letter he compliments the Abderites for taking so deep an interest in the health of Democritus; observing, "certainly, happy is the people who esteem good men to be their best bulwarks, and prudent counsel their strongest walls and towers." With all this wisdom, Hippocrates was a man. He grumbled, as modern doctors grumble, at the ingratitude and unreasonableness of his patients. He roundly asserted in his old age, that he had during life got far more blame than praise—forgetting the almost divine honours that had been paid him, and that humanity was an infirm thing, full of ignorance and prejudice. But in every age wise old men have forgot the true philosophy, of taking men as they find them. Accustomed to homage, they demand obedience rather than persuade to it. Their expectations are really inconsistent with their experience, and they are therefore disappointed.

There are many examples in modern literature like to those we have noticed—men made up of mighty intellect and human frailty, but not the less to be honoured and esteemed, for they were good men. Sir Thomas Brown, the author of the 'Religio Medici,' was one of these. A modern essayist, writing of him observes (pointedly with reference to our present remarks): "What the philosopher of Norwich considered miraculous, was probably this, that he had escaped from 'Pyrrho's maze,' and had never been contaminated in 'Epicurus' stye;' that he had neither striven for place among the 'wrangling crew,' nor sought to make his way with the sordid herd; that he had not sold himself to the service of Mammon; but in mature years, and with deliberate judgment, had chosen a calling in which he might continually increase his knowledge and enlarge his views, and entertain a reasonable hope that while he endeavoured to relieve the sufferings of his fellow-creatures and discipline his own mind, the labours wherein his life was past would neither be useless to others nor to himself."

Professor Marx introduces us to several such departed spirits as the author of the 'Religio Medici,' in a manner singularly quaint and attractive; for he discusses the ethical topics of medicine in a series of letters to Steiglitz, Cheyne, James Gregory, Hallé, Lettsom, Pinel, Mead, Boerhaave, &c., holding correspondence with them in the grave, as if they had not drunk of Lethe, and mortal affairs still had an interest with them.

"Circumstant animæ dextrâ lævâque frequentes.
Nec vidisse semel satis est: juvat usque morari,
Et conferre gradum."

The first letter is to a friend the author has but recently lost:

"To Steiglitz. Since the 31st of October, 1840, when you said farewell to the earthly, my days, and not my writing-paper, have had a margin of mourning. At the unexpected news of your departure hence, I felt that the death of a friend rends the heart, that the descent of a great man to the grave is a disruption of nature. Three years have sped on since then, amid a variety of feelings, but my soul is still agitated as if I had lost you but yesterday, while I see more clearly the greatness of my loss. To distinctly recall the many years I lived with you in a close interchange of thoughts and feelings, and to celebrate a resurrection-festival of your love, I had begun your memoirs, as a monument to your memory; but, although so noble the material, the chisel that should have worked out the precious marble was useless in my trembling hand. But yet truly the world requires not my delineation, since to contemporaries you were a model of excellence, and to posterity your own works remain. To myself, however, you appear as a dear father or teacher, extending your hands to bless me. Why is it that to-day I invoke your name more loudly than usual? Because I intend to discourse of physicians who consecrated alike their soul and strength to pure humanity. Your modesty will not be offended if, grateful for that, I first discourse of you."

The great merit of Steiglitz consisted, according to his mourning friend, in the rare union of genius and experience. He was bold, too, for truth, and ever *called things by their right names.* How great are the men who thus name things! and necessarily great, because they set the right objects of toil before them, and see the shortest way to their attainment. These last-mentioned merits belonged also Steiglitz, and with them, freedom from envy, and a tolerant spirit.

The next letter is to PETER DE APONO. "Famous Peter, permit me to thou thee, for thou wrotest in Latin and art used to be thoued," is the exordium of this epistle. Petrus de Apono was condemned after his death in 1316 by the inquisition, and his poor remains were ordered to be burnt; but a faithful female friend took his body from its grave and hid it; so that vengeance could only be wreaked on his effigy. People supposed that he was a sorcerer, and had learnt the seven liberal sciences by means of seven familiar spirits that he kept close prisoners in a crystal vase. He could also, happy man! make the money he spent come again into his pocket. Professor Marx congratulates his "dear Peter" on being more fortunate as to the mode of his departure from earth than Daniel of Gadden, who having collected various specimens for a museum of natural history (stuffed snakes and the like), was seized by the mob as a sorcerer, tortured, torn to pieces, and his intestines strewed about the street. This happened at Moscow in 1682. The ignorant ferocity and ingratitude of the populace towards physicians has been seen in our own day; the *Colonna infame* at Milan would not have been a solitary memorial of a paroxysm of public insanity if in 1832 the government of Russia had been less despotic.

The epistle to Dr. GEORGE CHEYNE exhibits him as a teetotaller and a man of peace. The following quotation from his "account of himself," proves that he was as good a hydriatic as Priessnitz himself.

> "I firmly believe and am as much convinced as I am of any natural effect, that water-drinking only will preserve all the opulent healthy from every mortal distemper; and that a diet of milk and seeds, with water-drinking only, duly continued and prudently managed, with proper evacuations, air, and exercise, is the most infallible antidote for all the obstinate diseases of the body and distemperature of the mind," &c.

Professor Marx assures Dr. G. Cheyne that when he treats on dietetics his principles shall be few and simple. Health he will maintain to be a virtue; serenity of mind a duty; that disgust at being sick cannot be too deeply impressed on the mind. The "*valere aude*," he would propose for adoption as a general salutation.

The epistle to HALLÉ sets forth the patience and benevolence of the conscientious practitioner. Hallé visited Malesherbes in prison and drew up the petition for the life of Lavoisier. If the stones of Paris could speak they would say, "Hallé wet us with his tears." Professor Marx describes vividly the painful and harassing nature of the duties of the physician in seeing suffering he cannot alleviate; ties broken he cannot keep unbroken; domestic griefs he cannot console. And while all look to the physician for solace none share his woes: "For the dying," Professor Marx observes, "there is an euthanasia; for the sorrowing, visits of condolence; but who cumbers himself about the mourning mediciner?" Many, we boldly answer, if, feeling himself the ministering messenger of Providence to afflicted man, he have done his duty cordially, earnestly, and well as his poor powers have permitted. There is no sweeter reward to the sick and sorrowing practitioner than the heartfelt condolence of grateful and affectionate patients, especially if they be poor. Tears are shed for his illness; sympathy expressed for his losses; and the prayers of the needy for him assuredly reach the throne of God. "Blessed is he who considereth the poor; the Lord shall strengthen him upon the bed of languishing."

The next letter is addressed to Dr. JAMES GREGORY, and discusses principally the literary education and attainments of the physician. The names of several medical poets are enumerated, those of Akenside and Darwin being, however, omitted. The titles of several proposed odes, catechisms, ballads, &c. are given with some satirical effect, as for example: "The Superfluousness of Technical Expressions, a Sermon; The Mutual fond Affections of Physicians, a Dream; The Friendships of Physicians, a Myth; The unexpected Meeting of two Physicians at the Patient's Bedside, a Physiological Interlude; On the Efforts made to become a domestic Physician, an Heroic Poem; On the Embarrassments of having neither Patients nor Friends, a Ballad;" and others similar.

A letter to ALBERT THAER is followed by an amusing collection of aphorisms and aphoristic puns. Several of the latter, for obvious reasons, lose all their point in translation. We shall conclude our notice of this charming little volume with a small selection from these aphoristic sentences. We number them, for the sake of easy distinction:

1. "Time is the most experienced doctor; patience is the gentlest medicine.

2. "Thanks for a merciful punishment come as sincerely from the heart as a risus Sardonicus.

3. "Physicians are bred to be honorary members of all humane societies.

4. "Every vein, except a silver vein, returns to the heart.

5. "The physician like the diplomatist, must tread softly.

6. "He who makes the cerebellum to be the seat of instinct cannot say truly that his arbor vitæ (tree of life) is the tree of knowledge.

7. "The conscientious physician is just as guilty of the death of his patient as the still-born infant of the death of its mother.

8. "How many have nothing more sacred within them than the os sacrum!

9. "The prescription of a pulvis (dust) is not unfrequently a memento mori.

10. "It is with many friendships as with the teeth, when the enamel is gone they give pain.

11. "Lunar caustic is white but it darkens the skin; so the hypocrite laughs openly, but in secret blackens the character.

12. "To gild the pill is out of fashion, but not to gild the palm.

13. "Tournaments have ceased; but the physician ever jousts with antagonists having visors down, and a death's head on their shields.

14. "Man may learn the prudence of yielding sometimes, from this, that a stiff-neck is considered a disease.

15. "Physicians risk their lives often, most men, even soldiers, seldom.

16. "An autobiography unrolls a mummy before a glass.

17 "He who has no theory, cannot be practical.

18. "The plunder of a church is severely punished, that of the intellect goes free.

19. "Many stick to their calling as they would to a tread-mill; they often try to mount, but never rise.

20. "The rich have an idiosyncrasy, not against devils, but against poor devils.

21. "A man will remember you longer for giving him gold than for giving him health.

22. "Men must treat their acquirements as Tippoo Saib his pearls; ever seek after better.

23. "Pleasant words, like honey in an electuary, unite dissimilar things together.

24. "The physician has more need of a chart than of a map; for it is much more important to him to know what to avoid, than where to stop.

25. "The worst inheritance is an hereditary disease.

26. "Great men are the lighthouses of humanity.

27. "Emptiness is contemptible; even children will not play with deaf nuts.

28. "Metastatic diseases, as for example, gout and rheumatism, must be treated like vagabonds, with bread and water.

29. "The hop-dances, are to the lungs, death-dances.

30. "England for ever! who knows not himself knows nevertheless the English plaster and the English salt

31. "To the unfortunate the heart is as a gaping wound, from which the blood flows unstaunched.

32. "The best medical police consists in dignified humanity. Through this the relations of medicine to science, to the state, to the public, to the colleges are most readily developed. High morals, energetic habits, and a well-grounded education are the surest means of success." (pp. 85, &c.)

With this wisdom we close our extracts; not without a hope that the doctrine of the last aphorism may, in England at least, be applied to practice, and the profession generally be to society what its individual members have been to individuals, an *ισοθεος φῶs*, a divine light, irradiating, invigorating, and perfecting our social condition.

We have before recommended the works of Professor Marx to the student of German language and literature. The terseness and elegance of his diction are equalled only by the charm of his sentiments. Besides he is well acquainted with our language, our literature and our institutions. His ethics, we need not say, are in every way British, refined and illustrated by the operation of his own mind.

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## ART. XIII.

*De la Mortalité à Bruxelles, comparée a celle des autres Grandes Villes.* Par ED. DUCPETIAUX, Inspecteur Général des Prisons et des Etablissements de Bienfaisance; Membre de la Commission centrale de Statistique du Royaume, du Conseil central de Salubrité publique de Bruxelles, des Sociétés Médicales de Bruxelles et de Gand, &c.—*Bruxelles*, 1844.

*On the Mortality of Brussels, compared with that of other large Cities.* By ED. DUCPETIAUX, &c. &c.—*Brussels*, 1844.

M. DUCPETIAUX is already favorably known by a long series of works devoted to the social improvement of the poorer classes of his countrymen. Since 1827 he has busied himself in preparing for the press no less than thirty publications, of which this is the last, and by no means the least important, all devoted to this excellent object. The abolition of the punishment of death, the influence of want and ignorance on crime, the improvement of the condition of the insane, the means of relieving and preventing poverty, the state of prisons, the system of solitary confinement, temperance societies, savings-banks, the physical and moral condition of young people employed in factories, the prevalence of intemperance among the working classes,—these are among the topics which have employed his unwearied pen. But while his efforts have been directed, as those of a good citizen should be, to the improvement of the physical and moral condition of his own countrymen and townsmen, he has not been unmindful of the efforts making in other countries for the promotion of the same good cause; but, with a laudable industry, has selected from the official and other records of England, France, and Germany, the most recent and most valuable contributions to the science of public health, and has brought them to bear with talent and success on the questions which have engaged his attention. The present publication contains matter which will well repay the labour of extraction. The following passage from the author's introduction sufficiently explains the aim and scope of his labours.

"The principal object of this work is to expose the deplorable condition of the labouring class at Brussels, the dangers to which it is incessantly exposed, and the necessity of taking prompt and complete measures for snatching it from the pernicious influences which decimate it. In our handsome capital there are streets, nay, entire districts, where death wields his scythe as in certain cities of the east in the time of the plague. Of two infants born there, one is inevitably condemned to perish before it has attained its fourth or fifth year. More than a third of the inhabitants die in hospitals. Without entering into an explanation of the causes which lead to these sad consequences, suffice it to state that more than a fourth part of the population is inscribed on the list of paupers, and that nearly a fourth of the families have only a single room to live in." And yet "the city of Brussels, setting aside the causes of unhealthiness which attach neither to its climate nor to its position, and which affect only the labouring class, is one of the most healthy cities in Europe. Those inhabitants who enjoy a certain independence live as long, or perhaps even longer, than in any other locality."

Such is the state of things at Brussels, and such, or nearly such, is the present history of every large city on the face of the earth. The wealthy congregated in open and airy streets and squares, in handsome and spacious houses, with every advantage and every luxury which money can purchase; the poor, crowded into narrow alleys and blind courts, or thrust into damp cellars under ground, reeking with filth and every species of abomination. The consequences of these opposite conditions are, health and long life to the one, disease and premature death to the other. Would that these were the only ones! But our author shall conduct us through some of the poorest quarters of the splendid city of Brussels. During the winter of 1838, a commission of inquiry, appointed by the central board of Public Health, and of which he was a member, minutely examined some of the worst localities, and published a Report, of which we give the following abstract.

The commissioners directed their inquiries chiefly towards the poorest and most populous districts, into which the labouring class is continually crowding more and more closely as the new and elegant structures which are springing up in the centre of the capital encroach on the localities which were originally tenanted by the poorer class alone. A great number of houses were entered and minutely examined, and their inmates interrogated as to their condition. The entire district presented an aspect of unmixed poverty. The streets and alleys, always dirty and ill-paved, become during rain and thaw, so many ponds of filth, the water having no means of escape. The passages are so narrow, there is such a complete absence of open courts or gardens, the houses are so badly built, and the population so crowded, that the circulation of air and ventilation is, so to speak, impossible. The most essential conveniences are wanting in the greater part of the houses; they have neither sewers nor privies, nor pumps, or, if there are any, they must supply the wants of large numbers of persons. In one instance, nearly seventy families were obliged to make use of the same pump and privy. On entering the houses the sight was still more painful. Though some of the rooms reminded the visitor of the proverbial cleanliness of the Flemish, they were few and far between; while the alleys, the landings, and the staircases, occupied by numerous families, were in a state of the most disgusting filthiness. The space occupied by each family was too narrow to supply the quantity of air necessary for health, their appearance, therefore, was languid and miserable, and the children, pale and attenuated, bore visible traces of premature suffering. The number affected with rickets, scrofula, and chlorosis, was considerable, and the mortality among infants and old people such as to surpass even the most unfavorable averages. When one visits these receptacles of misery, one is astonished to see so few old people, and when one questions the parents, there are few who have not to deplore the loss of one or more children.

The intellectual state of these families was not more favorable than their physical condition. But we shall not enter into the details necessary to establish this position. Suffice it to state that in every respect, physical and moral, the city of Brussels would suffer by comparison with any but the very worst districts of the worst towns of our own country; and this is saying a great deal. We beg pardon, it does not appear that any of its inhabitants live in cellars. We would not for the world deprive Liverpool of its bad pre-eminence in this respect.

We will now follow our author step by step in his careful analysis of the statistical data which exhibit the effect of these unwholesome influences on the health, life, and general well-being of the poorer inhabitants of Brussels. The population of Brussels, on the 15th of March, 1842, was 113,207, of which 52,538 were males, and 60,569 females. During the three years from 1840 to 1842 inclusive, there were 10,976 deaths, or 3658 a year, exclusive of children still-born. In round numbers, then, there was one death in 31 inhabitants, or including still-born children, one in 28½. During the eighteen years from 1825 to 1842 inclusive, the population increased from 84,004 to 116,650, and the deaths from 3146 to 4336. The number of deaths fluctuated during this period between 3022, in 1827, and 4704 in 1838. In 1832, the year of the cholera, 4676 deaths occurred; and in 1842, the last of the series, 4336. The proportional number varied, during the same period, from 1 in 28 in 1827 and 1828, to 1 in 20 in 1832, the year of the cholera. The highest relative mortality, next to this, was 1 in 21·5 in 1829. In 1842, the ratio was 1 in 25·7. These numbers and proportions are exclusive of still-born children, and comprise several deaths occurring in hospitals among persons not inhabitants of Brussels.

If we limit ourselves to the three years, from 1840 to 1842, and exclude the still-born, we have an average mortality of 1 in 31; and, distinguishing the sexes, of 1 in 29 for males, and 1 in 33 for females.

During the same period of three years, 1721 deaths occurred under five years, and 1937 above that age; being, respectively, 47 and 53 per cent. Out of 5812 deaths which took place during the three years, above five years of age, 1545 occurred in the Hospitals of St. Pierre and St. Jean. More than a fourth, therefore (1 in 3·7), of the deaths above five years of age, took place in these last resorts of destitution. If we add to these numbers the deaths taking place in other charitable institutions, and in the Depôt de Mendicité of La Cambre, which contains about 2000 paupers, we have nearly one third of the annual deaths taking place in the hospitals and hospices.

The mortality of 1 in 31 is that of the whole of Brussels; but it appears, from a series of elaborate tables prepared by our author, that in different quarters of the city, it varies within very wide limits. In the eight districts into which the city is divided, the mortality ranges from 1 in 30 to 1 in 46; and in one sub-district in which the deaths amounted to 1906, it was as high as 1 in 25. The sanitary condition of the city appears more distinctly from an exact comparison instituted between that part of the population which is placed in circumstances most unfavorable to health, and that which enjoys greater advantages. In the former, which comprises 206 streets and 66,182 inhabitants, the mortality is 1 in 29, more than half the deaths (54 per cent.) take place under five years of age, nearly a third of the deaths occur in hospitals, and there is one still-birth in 330 inhabitants. On the other hand, in the districts placed under the more favorable circumstances, which comprise 45,977 inhabitants, the annual mortality is 1 in 53, only 42 per cent. of the deaths take place under five years of age, 1 death in 8 takes place in hospital, and there is one still-birth in 460 inhabitants.

The population of Brussels is next divided into five classes: those devoted to industry and commerce, domestics and day-labourers, the members of the liberal professions, proprietors, and miscellaneous. The following are the chief results obtained from these classes; In the class of domestics and day-labourers or journeymen (journaliers), there is 1 still-birth to 125 persons; in the class designated as devoted to industry and commerce, 1 still-birth to 260 persons; while in the three groups comprising the liberal professions, proprietors, and other persons in independent circumstances, the proportions are 1 in 400, 1 in 600, and 1 in 2785. The same disparity exists between the annual mortality of the several classes under five years of age. Among domestics and journeymen, it amounts to 54 per cent., industry and commerce figures for 51 per cent., professions not specified 43 per cent., the liberal professions 33 per cent., and proprietors and men of independent means 6 per cent. Lastly, the annual mortality among the class of domestics and journeymen, exclusive of still-births, is 1 in 14; among the class devoted to industry and commerce 1 in 27; while the liberal professions, proprietors, &c. lose only 1 in 50·6. If we include the still-born, the numbers for the three classes respectively are 1 in 12·5, 1 in 24·7, and 1 in 49.

Our author next takes a glance at the statistics of Belgium, from which we deduce the following results: During the year 1841, there were, in the whole kingdom, 102,640 deaths, including 5532 still-births in a population of 4,138,382, which gives, exclusive of still-births, 1 death in 42·62 inhabitants, and 1 still-birth in 748 inhabitants. If we add the still-births, the mortality becomes 1 in 40; which is somewhat more favorable than that of the four preceding years, viz. 1 in 38. The births were to the deaths as 25 to 17½. The density of the population in the rural districts, and the number of persons receiving poor-relief, do not appear to bear any regular proportion to the number of deaths; but if we compare the seven provinces which have the largest population, relative to their extent, with the three which have the smallest, we find that, while the density of the population in the former is to that in the latter as 173 to 57, the mortality is as 1 in 37½ and 1 in 42. The author very justly remarks, that the amount of relief given to the poor is no test of destitution, but rather of the extent of the funds appropriated to charitable purposes.

A startling fact, to which attention is very forcibly directed, is the constant increase in the proportional number of deaths which has taken place during the last twelve years in all the provinces of Belgium. Comparing the interval of 1825-9 with that of 1837-40, it appears that the civic mortality was 1 in 37 for the former period, and 1 in 32 for the latter, while the rural mortality for the two periods was 1 in 47 and 1 in 40; showing for the entire kingdom, in twelve years, an increase of nearly twelve per cent.

From some tabular comparisons instituted between the civic and rural districts of Belgium, it appears: 1. That life is generally longer in the country than in the towns. 2. That a residence in the country is particularly favorable to children of both sexes under five years of age; while, on the contrary, it seems to be injurious to males from five to twenty, and to females up to fifty years of age. 3. That whilst the female inhabitants of towns, during the interval from thirty to forty years of age, lose scarcely 1 per cent. more than males of the same age, and their mortality is less than that of males from twenty to thirty years of age, the females who reside in the country lose, from thirty to forty years of age, nearly 3 per cent. more than males of the same age. This is attributable to the extensive employment of females in the severe labours of the field.

The mortality of towns in Belgium, of which the population ranges between less than 2000 and more than 100,000, is as high as 1 in 24, and as low as 1 in 52. We have thrown these towns, amounting to 59 in number, into groups, according to the number of their inhabitants, and we find that, as a general rule, the mortality increases with the population. Thus, while the mortality in towns containing less than 5000 inhabitants is 1 in 37, that of towns containing from 50,000 to 100,000 is 1 in 33, and that of Brussels as high as 1 in 24. This rate differs from that already given, but the cause of the difference is explained in the first clause of the following summary. The author states:

1. That the city of Brussels is, of all the towns of the kingdom, that in which the number of deaths is proportionably the most considerable. During the period of four years, from 1837 to 1840, there was 1 death in 24 inhabitants. This proportion is higher than that deduced from the registers of the *état civil* for the years 1840-1-2, compared with the population, according to the census of 1842 (1 in 30·9). We must doubtless attribute that difference chiefly to the fact that, during the last period, the still-born have been deducted from the deaths, properly so called; and that the census-returns give a larger population than that which had been previously deduced from the census of 1829, added to the balance of births, deaths, and changes of residence ascertained subsequently to that period. If we add the still-born to the deaths during

that same period, we shall have a yearly average of 3966 deaths in a population of 113,207 persons, or one death in 28·5 inhabitants. On the other hand, if we assume, as is probably the case, that the actual population of the majority of the other towns exceeds, as at Brussels, the figures given by the official returns, we shall find that the proportions remain nearly the same, though in general a little less unfavorable. 2. That though the relative number of deaths in the large towns, and especially in the manufacturing towns, is generally higher than in those of less importance, the situation does not exercise in that respect any appreciable influence. 3. That we must attribute the differences existing in the mortality of towns, not to general causes, such as situation, climate, elevation, the course and distribution of the rivers, &c., but to causes purely local.

Having demonstrated the high rate of mortality in Brussels, and compared it in that respect with the rural districts of Belgium and several of its towns, our author proceeds to inquire into the causes of that high mortality, and, by means of ingeniously-arranged tables, shows that there is a coincidence between the degree of indigence, the number of deaths, and all those circumstances, physical and moral, which are most to be deplored. Taking the number of indigent persons as the basis of his classification, Ducpétiaux divides the inhabitants of Brussels into four classes, of which the first consists of families having more than one half of their members inscribed on the lists of paupers, the second from a tenth to a half, the third less than a tenth, and the fourth none. It results from this comparison, that the first and most indigent class loses annually 1 in 30·3 inhabitants, the second 1 in 30, the third 1 in 39·9, and the fourth 1 in 50. The deaths in hospitals are, in round numbers, the first class 1 in 5, in the second 1 in 6, in the third 1 in 8, and in the fourth 1 in 9. The deaths at five years and under are to those above five years, for the first class as 55 to 45, for the second as 49½ to 50½, for the third 39 to 61, and for the fourth 32 to 68. But there are certain streets in Brussels in which the mortality under five years greatly surpasses that of the first class, amounting to no less than 70 and 75 per cent.

Though the indigence of the inhabitants is placed foremost among the causes of the high mortality of Brussels, intemperance, immorality, and want of cleanliness are allowed their full influence. Here, as elsewhere, want, ignorance, disease, and crime go hand in hand, each standing towards the other in the relation both of cause and effect. In illustration of the moral condition of this unhealthy population, it will suffice to state that, in the class of domestics and journeymen, 36 out of every 100 births are illegitimate; and that among entire classes of females, the illegitimate children form 73, 83, 98, and even 99 per cent. of the total number of births.

Having now displayed the sanitary condition of Brussels, we will follow the example of our author, and compare it with that of other large cities, premising that the mortality for the whole of Belgium for the year 1842 was 1 in 40·5, while that of England during the year 1841 was 1 in 46, and of France in the same year 1 in 40·9. Belgium, therefore, is in nearly the same sanitary condition as France, and both countries are much less favorably circumstanced than England. The mortality of Brussels, as we have seen, is 1 in 28·5, being somewhat more favorable than the two most unhealthy towns in England, Manchester and Liverpool; the former of which loses annually 1 in 28, the latter 1 in 28·3 of its inhabitants. A few of the continental cities present a still higher mortality. The number of deaths taking place in the hospitals of Brussels is very considerable. In London, in 1839-40, the deaths in hospitals were only 5·5 per cent of the total deaths; in Paris, in 1841, 27 per cent.; but in Brussels they amount to the enormous number of 31 per cent. The mortality under five years of age in Brussels is 47 per cent., while in London it is only 41 per cent.

These details are sufficient to show that the sanitary condition of Brussels is extremely unfavorable, as compared with that of most other large cities. It ranks by only a small fraction of a unit above our own Manchester and Liverpool.

We shall now conclude our notice of M. Ducpétiaux's praiseworthy labours by a summary of the means which he proposes for the improvement of the sanitary condition of the city of Brussels. Such a summary cannot fail to be useful at the present time, when happily the subject of public health is beginning to engage that attention to which its great importance entitles it.

The destitution, which he places foremost among the causes of the great mortality of Brussels, and which he shows to be constantly on the increase, is, as he most justly observes, not to be removed or materially diminished by alms-giving. Though the amount of the sums expended for the relief of the poor falls little short of two millions of francs a year, it produces little or no impression upon the mass of poverty with which it has to contend. And why? Because hitherto the efforts of the benevolent have been directed solely to the relief of the poor, without giving one thought to the prevention of poverty. We may double or triple the amount of our charities, but shall gain no useful result. We are merely casting our riches into a yawning gulf, which opens the wider with each fruitless attempt to fill it. Hopeless as is the attempt, we do not even combine to effect our object, but each man separately drops his mite into the abyss, vainly flattering himself that he is doing something towards closing it. Modern benevolence is a disorderly sort of personage, assuming a thousand odd shapes, and making use of a thousand odd instruments, excessively wrong-headed, marvellously independent, and having an Englishman's own horror of centralization. She inspires a host of well-meaning busybodies, who go forth one by one, armed with coal-tickets, soup-tickets, mendicity-tickets, with blankets, water-gruel, and advice gratis, for the so-called poor; and who really flatter themselves that these good things are working good, that they fill the craving stomachs and clothe the shivering frames of the really poor and destitute. Alas for our good intentions! It is almost a pity that we should not now and then be constrained to pay a visit to the gin-shop or the pawnbrokers. We should soon learn the real market value of tickets and blankets in those chosen resorts of the poverty that parades its rags abroad or cherishes them at home, for the especial edification of ladies bountiful and lay visitors. These things are not exactly written in the work of our author, but something not unlike them is to be found there. He, too, complains of want of system and unity of purpose.

In lieu of a single fund, he says, there are ten or twenty *caisses de secours;* instead of a common centre of distribution, there are almost as many centres as there are charitable associations or benevolent persons. Each man, as he says, has his own poor; that is to say, each man gives without inquiring what his neighbours are doing. What is the result? Why, that oftentimes the cunning rogue, who holds out his hand on every side, gathers a more abundant harvest than the really distressed; that the charity destined to supply imperious wants only serves to encourage an immoral traffic; that the honest artisan, sick and out of work, loathes to exhibit his own misery and that of his family, and ashamed to beg from door to door, remains forgotten in his miserable abode, a prey to the most cruel privations, while a shameless band, always on the scent of charitable contributions, make a public exposure of their rapacity and degradation. We have seen these pretended poor sell their coal- and bread-tickets, which they had succeeded in obtaining, to gorge themselves with beer and gin at the cabaret; and if one would only take the pains to examine the registers of the Mont de Pieté, we should probably find that a great part of the clothing and blankets distributed, so to speak, by lottery, have lost themselves in the gulf dug by vice and misconduct.

Brussels, then, resembles our own large towns, not only in its excessive mortality, and in the destitution of which it is both cause and effect, but also in the effrontery and dishonest practices of those who make poverty their profession, who beg without a blush, defraud the destitute without compunction, and cheat unsuspecting benevolence, till it changes to a hard-hearted scepticism as to the very existence of the poverty which it endeavoured with so much enthusiasm to relieve. The obvious remedy for this state of things is association and centralization—a combination of individual effort, and a union of the scattered resources of charitable individuals and small societies. The use to be made of the funds so collected, and the direction which the efforts of the charitable should take, will best appear by following our author in his further enumeration of the causes of the high mortality of Brussels, and the means by which it may be diminished.

Indigence must be regarded not so much as the immediate cause of an excessive mortality as the means whereby men are brought into contact with unwholesome influences. Men do not perish simply because they are poor, but because their poverty exposes them to certain privations and certain dangers, from which persons in more easy circumstances can purchase the means of escape.

First and foremost among these dangers our author places the state of the dwellings of the working-class, which he describes as wanting in every element conducive to health. Space, air, light, water—all in defect; filth and foul odours abounding. A great number of indigent families are worse lodged, in many respects, than the animals. In favour of the latter we take hygienic precautions which are entirely neglected in the case of the former. We pull down ruinous and decayed houses only to build on their foundations elegant mansions for the rich, while the poor are crowded into the obscure, filthy, and infected houses in the immediate neighbourhood. No provision is made for the poor whom we are driving into worse habitations than those which they have left. We doubtless improve the appearance of our towns, and build some very handsome screens to shut out from our sight the misery which we have invaded, but what provision do we make for the poor whom we have displaced? When we inclose some worthless common, which is to the poor of the country what St. Giles's is to those of the metropolis—a damp unwholesome breeder of ague and fever—we are sadly scandalized, and justly so, if the rich reap all the benefits of the improvement; but when we destroy the chosen resorts of poverty in our towns, we feel ourselves under no obligation to restore aught of what we have taken away We virtually say to the poor whom we have driven out of St. Giles's, "Your neighbours of Drury Lane and Gray's Inn are waiting with open arms to receive you. They are not at all over-crowded themselves, they have plenty of room: there is scarcely an apartment which has more than half a dozen occupants already; the centres and the corners of hundreds of Irish garrets and cellars are at your disposal for a very moderate rent. Go, and may health and prosperity attend you." But to be serious. Are we acting justly towards our poorer brethren, when we let slip such admirable opportunities of improving their condition? What should hinder the Woods and Forests from appropriating some part of the space which they clear, to wholesome houses for the poor? There is not an improvement, of the many which are constantly going on, which is not advocated on the ground of the benefit it confers on the working class: why should we not act up to our professions? Can any man point out another appropriation of space or money half so beneficial? It is not that the building of a few score of wholesome houses for the poor would make any great impression on the mass of misery-producing sickness which rages in all our large towns. An example is wanted, a model for the imitation of the proprietors of the houses of the poor who will think or can feel for their tenants Can our authorities be better occupied, or the funds at their disposal be better spent than in setting such an example? If charitable individuals want to know how best to employ their wealth, we can tell them. There is a Society established for Improving the Dwellings of the Poor, which, if properly supported and well managed, will do more substantial and abiding good than all the pottering plans for the relief of destitution, which are daily concocted by an uninstructed and misdirected benevolence. The misery which a thousand ingenious plans cannot cure, a little plain common sense can and will prevent.

In Belgium as in England, in Brussels as in London, Manchester and Liverpool, there is one great obstacle to improvement on the large scale, an improvement only to be effected by legislation; and that is the so-called rights of property. On this subject M. Ducpétiaux shall speak for himself.

People will perhaps urge as an objection to our plans, (for the improvement of the condition of the houses of the poor,) the necessary interference with the rights of property. But is our respect for the rights of property to be carried so far as to endanger the public health and security? The rights of the proprietor are necessarily limited by the rights of society. That limit is inscribed upon nearly every page of our law. Why does it not also exist for the speculator who lets his houses to the workman and indigent? We impose rigorous conditions on the sale of commodities, we confiscate without hesitation, meat of bad quality, putrid fish, adulterated liquors, and bread below the legal weight; and we not only confiscate these things, but we punish their owners. By what strange contradiction do the proprietors of these hideous dens, of these infectious holes, to inhabit which is at least as dangerous as the use of the most unwholesome food, not only remain unpunished, but continue to enjoy a peculiar protection, and a sort of privilege, inasmuch as they are exempt from the greater part of the conditions imposed upon other proprietors. If we forbid the sale of arsenic, &c., why do we allow a host of wretched beings to perish by slow poison in the unwholesome habitations in which they are necessarily confined?

The fatal effects of the unhealthy habitations of the working class at Brussels, are aggravated by the mephitic exhalations of the open sewers and heaps of filth, which in winter, and especially in wet seasons, infect the streets and narrow and dark alleys in which the poorer classes reside. Add to this the want of proper conveniences, and of a due supply of water, and some idea may be formed of the unfavorable circumstances which affect the health of the working class. The remedies for this sad state of things are obvious. A better system of sewerage in all its parts; the filling up, or covering in, of the open arms of the river Senne, which, during summer especially, exhale an insupportable odour; an improved method of paving and cleansing; a better and more abundant supply of pure water; the establishment of warm and cold baths, and of proper conveniences for the use of the working-class; the widening of the streets inhabited by the poor, and the ventilation of churches, workshops, and schools.

Scanty clothing, and insufficient or unwholesome food, augment the evils which the poor man has to contend with, both within and without his habitation. The remedial measures which the author proposes under this head are, the abolition or reduction to a great extent of the municipal taxes on objects of the first necessity, such as meat, beer, and fuel; a strict surveillance over the sale of articles of food; the establishment of bazaars for the sale of objects of the first necessity, where the working class might purchase provisions in small quantities at a low price, without being obliged to have recourse to small shopkeepers. These bazaars or depôts might be established by the public or local authorities, or by associations of the poor themselves. Assuming that the number of persons in Brussels who could profit by such establishments, amount to 30,000, and that if each person spends merely 100 francs a year, an annual saving of nearly half a million of francs would be effected, allowing a difference of only 15 per cent. between the wholesale and retail price of provisions. By extending the same principle of combination to other articles of primary necessity, such as clothing, bedding, fuel, and light, we should realize a reform more important for the labouring classes than could be effected if the greater part of the plans daily suggested for their advantage were put in practice.

The next group of evils pointed out by M. Ducpétiaux, are excessive labour, the unhealthiness of certain employments, and the bad state and deficient ventilation of many of the workshops. These evils affect especially the health of women and children engaged in sedentary occupations. The remedies suggested are, the enactment of a law to regulate the labour of young persons, and for the superintendence of workshops;

the revision and consolidation of the laws affecting unhealthy manufactures and employments, the purification of places of work, and the security of the working-class; the establishment of public gratuitous schools of swimming and gymnastics; the institution of popular games, and the formation of open spaces for exercise and amusement.

The habits of intemperance to which the poorer classes are addicted are next mentioned among the causes of their high mortality. The causes to which this sad habit are to be traced are thus detailed: the bad example to which they are, even from infancy, exposed; the choice of, or apprenticeship to, an occupation numbering a great many drunkards; the habit of debauch and disorder which results from the organization of clubs among those employed in the same manufacture; the complete idleness of the Sundays and holidays; the low price of brandy, gin, and other spirituous liquors, and the great number of public-houses where drinking goes on at all hours of the day and night; and lastly, the absence and forgetfulness of moral and religious principles. The remedies suggested will be readily deduced from this enumeration. They are, the removal of infants and young children from the contagious example of their parents, by means of a good system of popular instruction, requiring their attendance at school; the separation of apprentices, as much as possible, from the company of the older workmen, especially where they are addicted to habits of intemperance; the prevention of the complete idleness of the Sundays and holidays, by means of instructive and amusing popular occupations, which may be conducive to morality, and consequently to comfort; the suppression of the fatal habit of absenting themselves from work on the Monday; increasing the tax on spirituous liquors, and the stronger kinds of malt liquor; closing the public-houses at an early hour, and putting a stop to the gambling going on there on the Sunday and Monday; the careful and regular publication of all the sanguinary quarrels, crimes, and accidents, occasioned by drunkenness, in order to show the people, on every occasion and by every means, all that this vice has in it of hideous, and fatal, and brutal; and especially the revival of religious feeling and practice; and the punishment of drunkenness, and its severe discouragement by all the employers of labour. Such are some of the more general causes affecting the health of the labouring class, and such the remedies proposed for their mitigation or removal. The immorality which accompanies them is illustrated by a familiar test, the number of illegitimate children brought into the world by females belonging to the lower classes of the people. We are told that in the class of semstresses, laundresses, florists, dress-makers, weavers, lacemakers, and embroidresses, which comprises at Brussels 9000 women and young girls, there is scarcely one legitimate birth in 100. Desertion of children, and an excessive infantile mortality are the necessary consequences. It appears that of the children annually admitted into the Hospice des Enfants Trouvés, from three fourths to somewhat less than a half die during the first year. In 1840, there were 572 admissions, and 301 deaths under one year; in 1841, 604 admissions, and 297 deaths; and in 1842, 606 admissions, and 257 deaths.

Education and its defects, and the want of a good medical organization to carry out the proposed reforms are next commented on by our author, who concludes this part of his subject by proposing a system of combination, by which the poor might be provided on moderate terms with wholesome houses, and all things conducive to their comfort and well-being.

We would refer those who are interested in this most important subject, to the appendix of M. Ducpétiaux's work, in which will be found detailed plans with illustrative engravings. We shall content ourselves with merely indicating the chief objects which he proposes to accomplish. We know, he says, in what way the working-class is lodged, fed, and warmed; the employment of the means which we have pointed out, would, beyond a doubt, improve his position in these respects; but that improvement would be much more complete, and much more real, if we were to substitute for those filthy, damp, dark, and ill-ventilated ruins into which the poor are now crowded, houses as spacious as possible, agreeable, commodious, well-lighted, and well-ventilated. These houses might be built in the faubourgs, where land, building materials, and provisions are at a lower price. They should be arranged with regularity, in such a manner as to form streets, and entire quarters, varying in extent according to the number of persons, and the amount of their resources. In addition to their separate habitations, there should be places in common, a kitchen, a washhouse, an infirmary, baths, a common room for social meetings, an infant school, and a large open space planted with trees, with a portion set apart for games and gymnastic exercises. If the ground was moderate in price, we might attach to the quarter a certain number of small gardens.

Such are the evils which press upon the labouring population of Brussels, and such the remedies which our author would employ to mitigate or remove them. He concludes his very useful and able work by an appeal which would lose none of its force were it addressed to the wealthy and influential inhabitants of our own large towns.

"On recapitulating," he says, "the remedies to be applied to the excessive mortality of the working classes of Brussels, we have wished particularly to reply to that eternal argument of the indifferents and pessimists, who, when we point out any abuse or suffering, affirm at once that we must tolerate that which we cannot prevent, and that it would be a useless and foolish task to attempt to dry up the source of the evils which afflict humanity. Of all the means which we have proposed, there is not a single one which is not perfectly practicable, and which if applied, would not afford a real relief to the sufferings of a class whose lot is so deserving of pity. These means, nevertheless, are simple, and not expensive, especially when we have regard to the important object to be accomplished. They consist in a more useful and rational employment of the large resources which are annually absorbed in the capital, without any other result than that of maintaining indigence at its habitual level, and perpetuating the dependence and degradation of the unfortunates obliged to have recourse to public or private charity. We have seen that these resources may be valued at nearly two millions of francs; the appropriation every year of a part only of this sum to the work of prevention in the manner already pointed out, would suffice to reduce the enormous charges which the several charities impose. We should in this way reduce not only the budget of indigence which presses upon all the inhabitants, but the budget of suffering and mortality which presses almost exclusively on the labouring population. With this double advantage in view, it appears to us impossible that we can long remain indifferent. Almost every hour which strikes in our handsome capital corresponds to the last struggle of a dying man. If we take, as the average mortality of Brussels, that of the intermediate class, which, without enjoying independence, properly so-called, is nevertheless exempt from the privations which afflict exclusively the lower class, the figure of the mortality ought not to exceed the population of one death to forty-five inhabitants. By employing the means which we have passed in review, we have no doubt that we should attain that average for the entire population. We should thus save, every year, nearly 1500 wretched beings who now succumb to the influence of the deadly causes which are perpetuated under our very eyes. We adjure our municipal authorities, whose intentions are so pure and generous, we adjure all those of our fellow-citizens who, like ourselves, sympathize with the sufferings of the working class, to listen to our words. The question which we have discussed is one of life and death; we might have disguised the truth, but we have preferred openly displaying it, sure of being understood by some chosen spirits, who would not hesitate to join their efforts to ours to change a state of things, which if it should continue any longer, would impugn our civilization, and throw upon each of us a very grave responsibility."

We have given thus much space to M. Ducpètiaux's work, and have made much use of his own words, because the subject is one not of local but of general interest. It is not as the capital of Belgium, but as a large town, not as a special case, but as a general illustration, that we attach importance to the details of its mortality, of its insalubrity, and of the means of diminishing the one, and removing the other. If for Brussels you read London, Birmingham, Manchester, Liverpool, Glasgow, or Limerick, you will scarcely discover your mistake. The description of one large town may stand for that of another. The figures which represent the mortality may differ by a few units. The map may be shaded a little deeper, there may be more distress, more intemperance, more ignorance, more crime in one large town than in another, but the difference in degree will appear only in the tables, and the same words may be applied, without fear of exaggeration, to the best and to the worst. Each large city has its own peculiar mode of doing injustice to the poor: one delights in cellars and blind courts; another encumbers every available plot of ground with houses, without leaving a single open space for exercise and recreation; a third rejoices in an unusual scarcity of water, or exhibits a laudable economy in the matter of sewerage. All agree in shutting their eyes as long as they can to the evils which they are inflicting upon the poor, and in setting about the work of improvement as slowly and lazily as possible. The broad example of ignorance and bad economy set them by the government, is followed and improved upon by the municipal authorities, and thus, amid the slumbering idleness and quiet indifference of wealth and power, the poor man lives out his life of wretchedness, and wends his way unheeded and forgotten to his early grave.

The parallel between the present condition of the city of Brussels, and that of our large towns will be found to hold good in every particular. There, as here, the mortality is excessive, and the duration of life shortened by several years; and in both countries the same causes are in constant operation. The houses of the poor are badly constructed, scantily provided with water, and destitute of the means of cleanliness and decency. Ventilation is entirely neglected in all their places of resort. The workshop, the school, the hospital, and even the church are reeking with foul air. They are confined in the unwholesome shop or factory during long hours of work. The streets are without sewers, and filled with stagnant pools or heaps of filth. There are no open spaces for exercise and recreation, no baths for cleanliness. The mind of the poor man is as much neglected as his body, and vice and intemperance come as naturally to him as disease. How should it be otherwise?

Then there are the same obstacles to improvement here as in Belgium. The mass of mankind, of course, is both ignorant and indifferent, but those who really desire to help the poor begin at the wrong end. Instead of preventing poverty, they waste half the resources at their command in abortive attempts to relieve distress; and find with regret that every ingenious invention to prevent imposition is met with a still more ingenious plan to rob the distressed of the bounty which was intended for them. Instead of growing wise by failure, the philanthropist too often resigns himself to despair, and thus the poor are robbed one by one of those who had the best inclination to serve them. Experience of the little advantage derived from individual efforts leads to the formation of societies; but these have, though in a less degree, all the faults and defects which attach to the solitary efforts of the philanthropist. Great evils demand large resources, and these can only be obtained by a combination of many individuals. This spirit of combination for the carrying out of great and comprehensive plans for the benefit of the poorer classes is only beginning to work, and the want of it heretofore has been among the chief obstacles in the way of their improvement.

The right of property and the national horror of centralization are two other stumbling blocks in the poor man's path. Any man who has accumulated capital enough to hire the services of a workman, or to become the proprietor of a house may, with impunity, do what he pleases with either. He may overwork the poor wretch as much as he chooses, and compel him to breathe any kind of atmosphere; and he may let his house in any condition which seems best in his own eyes. These are the so-called rights of property, which we regard with such profound respect, that to touch them seems a sort of sacrilege. But, happily for the poor man, his wrongs are sometimes weighed against these rights, so as to strike a balance in his favour; and, happily for the rich, the curtailment of their assumed rights generally turns to their own advantage; so that, little by little, this obstacle is being removed, and threatens to leave the bugbear of centralization, in all its appalling magnitude, to fright the isles rom their propriety.

A word about centralization. There are some things which can only be well done, when done on a large scale. They not only require large means, but unity of purpose. Drainage, and sewerage, and the supply of water are of this nature; and they are precisely those things which most conduce to the health of all classes of society. If intrusted to local boards, they are sure to be badly and expensively done. What real obstacle exists to the amalgamation of all these costly commissions? A central board, with a skilful staff of officers, and comprehensive plan of operations, would do double the work at half the cost, and do it much better too. But, somehow or other, we Englishmen seem to have fallen into a habit of attaching vast importance to local governments and local boards. Our very liberties appear to depend upon their maintenance and extension. The vulgar squabbles of parish authorities are as music in our ears, and there is a smack of liberty in all their jobs. We have no intention of bringing down upon us the representatives of the rights of property, and the friends of local government; we shall therefore take refuge in one or two simple questions, which we submit with all the gravity in the world. Would not our liberties be safer in the hands of a people, conscious that their health and well-being were the constant object and aim of our legislation than in all the local boards and commissions in the world? Might not a large and comprehensive system of prevention be found to answer better, and be less costly, than isolated attempts at relief and cure? Would not schools and churches prove cheaper than prisons, pure air than physic, wholesome houses and workshops than hospitals and dispensaries; a population comprising a due proportion of adults and old men—of strength and wisdom—than one of which so large a part consists of widows and young children?

To conclude: Disease is a very costly thing, both to individuals and the public; and funerals are just as bad economy as any other item of unnecessary expenditure. Health and strength are a nation's best possessions in peace, and her surest defence in war. In both, the power of making great, rapid, and continuous efforts is at least as important as the possession of ingenious machinery and powerful artillery; and the time, perhaps, is not far distant when the cost of provisions and mechanical skill and dexterity shall be so nearly equalized, that superiority shall mainly turn on the strength and power of endurance of the mechanic and the soldier; and that nation which has best husbanded its living resources shall be most prosperous in peace, and most certainly successful in war.

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## ART. XV.

1. *Du Traitement de la Phthisie Pulmonaire. Quelques reflexions sur les Phthisiques observés à l'Hôpital Saint-André de Bordeaux.* Par EMILE L. PEREYRA, Médecin titulaire du dit Hôpital.—*Paris and Bordeaux*, 1843.

*On the Treatment of Pulmonary Consumption, &c.* By EMILE L. PEREYRA, Physician to the Hospital St. André Bordeaux.—*Paris and Bordeaux*, 1843. 8vo, pp. 84.

2. *Observations on the Treatment of some forms of Incipient Phthisis.* By JOSEPH BELL.—*Glasgow*, 1844. 8vo, pp. 22.

3. *A Practical Inquiry into the value of Medicinal Naphtha in Tubercular Phthisis.* By E. O. HOCKEN, M.D. &c —*London*, 1844. 8vo, pp. 72.

IS CONSUMPTION CURABLE? We are far from saying that it is not so. No philosophical physician, looking at the history of his science and art, can be justified in so believing. It is, however, a melancholy fact, of which evidence need scarcely be adduced, that no plan of treatment hitherto proposed can boast of even the humblest success in permanently arresting the progress of this dreadful malady. Nevertheless, we must not, and we do not despair. Things seemingly desperate have been achieved ere now even in medicine. We ourselves "'bate no jot of heart or hope," that the great deed, still to do, will yet be done. That we might not, in our little sphere, obstruct even any possible advance towards this goal of the desires of all good men, we have ever been most anxious to keep inquirers in the right path. The false fires which in all times have surrounded it—whether set up by honest ignorance or kindled by the unhallowed hands of empiricism for its own selfish ends—have had the same baneful influence on the progress and prospects of the true therapeutics of consumption: and if we have heretofore raised our voice against the preconization of individual drugs and partial appliances, in its treatment, it is because the principles on which the practice was based were unsound or visionary, and the evidence on which the alleged proofs of benefits rested, utterly valueless. Men ignorant, not merely of the natural history, pathology, and diagnosis of this particular disease, but ignorant of the common phenomena of living bodies, of the fundamental principles of therapeutics, and of all the laws that govern evidence in matters of science, can hardly be deemed capable of even searching for a remedy, much less can they be supposed qualified to find one, or to recognize it when found. It is at once melancholy and humiliating to review the enormous farrago of drugs and agents of different kinds, brought forward, within the last few years, as more or less infallible *cures* of phthisis; brought forward, too, for the most part, by men within the pale of the profession; and then to reflect on the present position of these remedies in the estimation of all rational and experienced practitioners.* Should not this consideration alone teach us that the propounders of such remedies were all on the wrong track? And does it not justify us in regarding with distrust and doubt, at least, all new propositions of like things by like men? Nevertheless, we feel ourselves bound, in defiance of augury and regardless of probabilities, to let no proposition of the kind pass without examination. On this principle we set about our present task, with honesty and good faith, at least, if with but little alacrity and with still less confidence of arriving at a gratifying result.

I. M. Emile Péreyra having, by a series of reflections, convinced himself of the identity of tuberculous and scrofulous diseases, and having heard, and also perused in the medical journals, sundry narratives of the wondrous efficacy of cod-liver oil in the latter affections, "*commenced, in* 1838, *to swerve from the path of death in which medicine was then walking.*" The meaning of this pompous announcement is, that M. Emile Péreyra began, in the year of grace mentioned, to prescribe cod-liver oil to such phthisical persons as fell under his care. And the result of the author's departure from the beaten track must at least have been excessively gratifying to himself; and not a little lucrative, too, if private patients were rescued from destruction as readily as the inmates of the Bordeaux Hospital: for such has been his success, that, in 1843, "the period had arrived when, conscientiously speaking, it would have appeared to him *a criminal neglect of the interests of humanity*, not to make that success known by publication." The *brochure* before us is the result of this conscientious feeling: we proceed to examine what reasons its pages afford for regretting that the author did not even earlier proclaim the powers of cod-liver oil in curing or arresting the progress of phthisis.

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* The following list contains onty a portion of the remedies alluded to: Chlorine inhalations; iodine inhalations; mercury; hydrocyanic acid; creasote; iodide of iron; digitalis; sal ammoniac; carbonate of potassa; common salt; chloride of lime; inhalations of the vapour of tar; the production of emphysema by a system of forced respiration; dry cupping or traction; liquor potassæ; the application of a seton; daily vomiting under the influence of emetics; iodide of potass and sarsaparilla; cod liver oil; wet linen rags to the chest; mechanical extraction of the tuberculous matter through the walls of the chest, &c. &c.

Cases are of course given, to substantiate the general statements made. The day has come, when the veriest charlatan (with which class, be it fully understood, we seriously believe the author is wholly unconnected) feels that some evidence is indispensable to produce any effect.

CASE I is that of a young man, having an enormous cavity in the upper lobe of the right lung; "the frequency of the pulse, the cough, the puriform expectoration, the copious night-sweats, the emaciation, allowed of no doubt that the disease *must* promptly terminate by death." But cod-liver oil and nourishing diet restored the patient's flesh and gaiety, and "in two months he left the hospital in a very satisfactory state." He had a seton under the right clavicle. The simple reflections which this case suggests, admitting the description given to be correct, is, that the symptoms enumerated do not by any means prove that death *must* have followed soon; and that not a few consumptive persons of the lower classes will undergo quite as marked improvement under the use of the very simplest medications, aided with nutritious diet, and strict attention to the general health.

CASE II. A prostitute, aged 18, had tubercles in great quantities, and "*two* cavities, of some size, at the upper part of the right side." How M. Péreyra distinguished the *two* cavities, he does not inform us: a neat piece of diagnosis, however, which would have been worth making public. Frequent pulse, loss of appetite, emaciation, hectic fever, cough, purulent expectoration, night-sweats, and suppression of catamenia, made the case, at the end of five months' illness—unquestionably a very serious one. A seton was placed over *one* of the cavities, the patient was nutritiously fed, and given two tablespoonfuls of the oil daily. In two months, at the outside, this girl left the hospital (March 1839), menstruating again, fat, strong, gay, exhibiting colour in her cheeks, and, above all, according to the nice diagnosis of her physician, with her "crude tubercles somewhat smaller;" the cavities, more refractory, continued there still. Thanks to the cod-liver oil, this patient was enabled to delight the youth of Bordeaux, by a resumption of her official duties in the streets; over-exertion, coupled with a want of due care in the distribution of her favours, led subsequently to her occupying a bed in the Venereal Hospital, and to the painful necessity of swallowing some "nasty blue pills;" but all this had done her lungs no sort of harm, when, in June 1842, she again fell under the observation of M. Péreyra, with an attack of "slight bronchitis." Auscultated at this period the chest furnished pectoriloquous resonance in the same place as before; "but the cavities appeared much smaller than before; there was no *tuberculous noise*, consequently there were no crude tubercles; and the respiration was natural in the remainder of both lungs." This case is put forward as perfectly conclusive, and demonstrating the cure of phthisis, by suspension of the disease and absorption of tubercles. In our minds, it simply proves the resolution of chronic pneumonia, under the influence of attention to diet, and removal froma life of debauchery and misery. The very stress which the author lays upon the phenomenon of pectoriloquy, leads us to doubt his skill as a practical auscultator; the woman is alleged to have had cavities, and to have *expectorated profusely*, yet nothing is said of cavernous rhonchus; the lung of the other side, we are led to conclude, was free from disease, as no statement is made of morbid signs furnished by it. Is it more likely, then, that the right organ had been the seat of pneumonia, or that it contained "two" tuberculous excavations? Any one in the habit of observing phthisis will have no difficulty in answering, infinitely the former. Lastly, after two months' treatment, the "crude tubercles appeared smaller:" imagine such a diminution being effected in two months in the size of tubercles, that auscultation should be able to mark out its extent! Is this likely; or is it not a trifling degree more probable that inflammatory consolidation had been the real condition present, and given way in the manner suggested?

M. Péreyra, however, having some misgivings as to his auscultatory skill being readily admitted, conceives it judicious to relate a case in which death—in spite, alas! of cod-liver oil—gave him the opportunity of showing that he might make a correct diagnosis. A boy aged 9 years laboured under intense fever, constant cough, colliquative sweats, suffocation, &c., and was found, on auscultation, (M. Péreyra, by the way, does not appear to practise percussion,) to have a considerable quantity of crude tubercles and a cavern on the right side, (whether single or double, M. Péreyra's cavities are always on the right side.) This child took the oil for a month, and left the hospital on the 16th of June, almost free from cough, without fever, fat, gay, and with a good appetite. On the 29th of July he was readmitted in an alarming state, (he had not taken the oil in the interim,) and died, in spite of its readministration, on the 14th of July. There *was* a cavity in the right lung, and crude tubercles in both lungs and several other organs. Now, this case, if considered alone, might certainly tend to impress us with a very exalted notion of the powers of cod-liver oil; but when we know, as a matter of certainty, that such temporary suspensions of the disease as that described are observed in cases where NATURE, and nature only, can claim the honour of the fortunate change—when, in a word, it has been proved to demonstration that, out of a given number of cases of phthisis, a certain proportion will stop short, temporarily, at some time or other, no one can say why or wherefore, and no matter what may have been the system of treatment adopted, or whether any treatment at all has been put in force—the efficacy of the nauseous drug sinks vastly in our estimation, and we can find no motive for regarding its administration and the suspension of the disease, in M. Péreyra's case, as otherwise than a simple coincidence.

M. Péreyra employs ferruginous preparations in cases where the symptoms of anemia are present,—a circumstance to which we advert for the purpose of mentioning that the only preparation of iron which the Bordeaux physician has found to be unbearable by phthisical patients, "on account of the irritation it produced, even in very small doses," is the ioduret. The *ioduret!* the very salt of which M. Dupasquier of Lyons, has sung the triumphs, in every conceivable form, as κατ'ἐξοχην, *the* panacea in phthisis.

M. Péreyra places a seton close to the anus, whenever a phthisical patient suffers from habitual pain in that region, loses a few drops of blood *per anum* occasionally, has a hemorrhoid which alters in bulk from time to time, and, in a word, whenever a kind of morbid action appears desirous of establishing itself in that quarter," We have the satisfaction of learning that this miserable infliction upon wretches worn with sufferings of various other kinds, has "appeared to the author productive of good effects."

But the writer is not merely a therapeutist. He aims at acquiring a place among those distinguished for their powers of diagnosis, and commenced with ardour about 1834, to seek "what signs, if any, might be esteemed indicative of the presence of non-ulcerated tubercles." He appears to have kept the results of this goodly determination profoundly secret, until news reached Bordeaux that M. Fournet had announced to the Academy of Medicine of Paris, the facts he had ascertained concerning the early detection of phthisis. The news led to M. Péreyra's reading a paper before the Medical Society of the former town, in which he made known the results of his own inquiries, and these results are as follow. A healthy respiration consists of an inspiratory and an expiratory sound, the former the *shorter* and the louder of the two. In the case of "miliary tubercles," on the contrary, things change; inspiration going forward as usual, expiration terminating abruptly, may be altogether inaudible, and, as a general proposition, only occupies three fourths of its natural time. When miliary tubercles accumulate in greater abundance, inspiration continues free, but the expiratory murmur closes abruptly, and inspiration immediately recommences. A special sound, like that of small metallic bodies rolling on each other at a distance from the ear, is another phenomenon connected with the same anatomical state, or with commencing softening. Such are the ideas which M. Péreyra hastened to communicate to his *chers confrères*, so as to obviate the chance of his being accused of plagiary, when M. Fournet's notions should be made known in detail. What was the astonishment of the ambitious Bordelais on learning that the Parisian had arrived at results diametrically opposed to his own,—at all events his worst enemy could not accuse him of the literary crime from which he was so anxious, even by anticipation, to shield his fair renown. But M. Péreyra, like a good arguer, sticks to his point,—M. Fournet, he maintains to have been led astray by preconceived ideas, &c. Now it is too well known at the present day, that the fundamental principles taught by M. Fournet, (borrowed as they were from Jackson and Louis, and confirmed by a multitude of others also, *before* he chose to adopt them,) are correct, however they be loaded with exaggeration and absurd refinements, to require our pronouncing a verdict against M. Péreyra. The laudable effort of our author should not indeed have been noticed, but from its connexion with his capability of diagnosticating the disease which he is anxious to persuade us he has cured with cod-liver oil.

M. Péreyra conceives he can (as others have imagined also) detect phthisis with certainty, from the characters of the pulse. There is certainly a peculiarity about the pulse of the consumptive, which, taken in connexion with other circumstances, lends its aid in determining the nature of their disease; we confess we can more readily appreciate this peculiarity at the bedside (it is not *mere* threadiness, quickness, and frequency combined, than convey its characters by words. M. Péreyra's test of the phthisical pulse stands in precisely, as it appears to us, the opposite predicament; it is most easily describable, but we fear, from such trials as we have already made, extremely difficult to detect. "The four fingers of the observer's left hand are to be placed upon the radial artery of the right fore-arm of the patient (and vice versâ), in such manner that the index finger rests upon the vessel immediately above the styloid process of the radius, the other three fingers, side by side, pressing the artery sufficiently to feel it distinctly; if, things being thus arranged, the pulse be more particularly felt by the median finger, we have the pectoral or, rather, pulmonary pulse: this exists in bronchitis, pneumonia, pleurisy, tubercles, &c. But where there are sufficient miliary tubercles in the lungs to disturb the general health, there is always a slight jerk, particularly felt by the median finger, immediately before the pulsation. The pulse has in fact something of the *bisferiens* character, but still cannot be confounded with it; the pulsation is a single one, but it seems as if the blood strikes the artery before it circulates onwards; I may make this more intelligible by comparing the divisions of the pulsation to a demisemiquaver (or grace-note) set before a crotchet." Will our readers (who we know must detest bad puns) pardon us for fearing that the whole thing is a crotchet?

M. Péreyra has also succeeded in curing most obstinate cases of true *porrigo favosa* with cod-liver oil.

The work concludes with statistical tables of the phthisical cases which came under the author's treatment. No additional satisfactory evidence appears of the real efficacy of the vaunted oil; and we think it fair to infer from M. Péreyra's own facts, that the specific is destined to take rank with the multitude of other medicines put forward from time to time with similar pretensions—sometimes honestly and ignorantly, generally dishonestly and knowingly—to fret its brief hour on the stage, and then be heard no more of.

II. Dr. J. Bell proposes to confine his observations to the treatment of "some forms of bronchitis and pneumonia occurring in persons of scrofulous constitutions, inflammatory affections which so frequently precede the development of confirmed phthisis, that they may be considered as incipient forms of the disease." It is known that some years past, Dr. O'Beirne, of Dublin, tried mercury in scrofulous inflammation of the joints, with results so favorable, that some of the physicians of the Irish capital thought it would be well to apply the treatment to cases of pulmonary "scrofulous inflammation," which means inflammation of the lungs occurring in individuals having the characters of skin, lips, hair, eyes, &c., which custom assigns to the strumous constitution. It may be remarked *en passant*, that such characters (they are too well-known to need being set down,) are rather rare than otherwise among consumptive people, but this is of course a matter of secondary importance. Be this as it may, the success of this medication was such, that Dr. J. Bell thought he could not act more wisely than in imitating the Irish practice, whenever an opportunity occurred.

He relates seven cases. In the first of these, (as he concludes himself, and as is obvious from his narrative,) the disease was bronchitis of both upper lobes; in the fourth, bronchitis with parenchymatous congestion; in the fifth and sixth, pneumonia; in the seventh, tubercles. The subjects of the first six cases recovered; we can see nothing mavellous in this, people having bronchitis and pneumonia do sometimes recover without (so say the least, Dr. Bell,) having had their gums made sore with mercury, and no shadow of evidence appears that the cure was more rapid, more perfect, or in any way preferable to that which results under modes of treatment of completely different character. The patient in the seventh case not only died, but died in about four months from the occurrence of the first symptoms;—a duration of the disease below the average. The mercury exhibited may, we contest not, be innocent of having hastened the fatal issue; on the other hand, at all events Dr. Bell will have some difficulty in proving that it kept his patient an additional hour above ground, and, to us it appears, the poor man would have had better reason to thank his medical advisers, had his closing hours not been embittered by the miseries of salivation.

Hence it follows, mercury is *the* remedy "in incipient phthisis," because, on the one hand, one tuberculous person, who used it, died sooner than the vast majority of phthisical people, who have never taken a grain of the mineral; and, on the other, because six persons recovered, after taking mercury, from bronchitis or pneumonia! But, says Dr. Bell, these six persons had fair skins, &c., and other signs of scrofula, and therefore *their* pulmonary inflammations were in fact "incipient phthisis," *so frequently* do such inflammations in such persons terminate in the latter malady. Is this a fact in the first place? Is the generation of tubercles traceable to these inflammations in the manner averred? Indubitably if it be so, it is only so in *extremely rare* cases. We are absolutely weary of repeating this, and of referring to the numerical statements of Louis and Grisolle, (the only really sound evidence bearing on the question in existence,) in its proof. The contrary notion is the mere produce of vague diagnosis and *a priori* reasoning.

But granting Dr. J. Bell the reality of the connexion, he ventures upon assuming in the teeth of all sound experience, between the diseases in question, and granting (what is almost as difficult to concede,) that he actually, by exhibiting mercury saved life, or warded off the alleged sequence of these affections in any of his cases of bronchitis and pneumonia, is he thereby justified in affirming that he has cured "*incipient phthisis?*" Let us put a parallel case. Stricture of the urethra, in almost every instance in which it exists, is the result of gonorrhea; stricture of the urethra leads frequently in certain constitutions to elaboration of phosphatic urine and chronic nephritis, or in other cases to chronic pyelitis with distension of the pelvis and infundibula, and more or less complete atrophy of the proper renal structure. Now, in pursuance of his principle, Dr. J. Bell will be fairly entitled, (as soon as he has cured some half dozen young gentlemen gratified by "a subscription from the ladies" in the shape of a blenorrhagia,) to favour the profession with an essay upon "Cases of incipient atrophous destruction of the kidneys, with chronic pyelitis, &c., cured in a fortnight with epsom salts and balsam copaiba."

III. Next on our list stand Dr. Hocken and Naphtha. Dr. Hocken has been for some time known to those whose avocations require them to watch the proceedings of literary persons, as an individual of unquiet temperament, prone to write *de omnibus rebus*. The character cannot be said to conciliate readers of any description, when taking up a new specimen of Dr. Hocken's pamphleteering faculty. Even the mildest-mannered critic feels disposed to look askance at each additional production of a man who, as far as his writings justify an opinion, does not certainly rise above the average of his compeers in mental qualifications, and yet presumes to put himself perpetually forward as a teacher and guide in matters of science and practice, to each of which men of the highest attainments have considered it necessary to devote the exclusive attention of years, before they felt themselves entitled to assume the office of instructors. But it is agreeable to know that any unpleasant feelings of this cast which might crowd into the mind, on scanning the title-page of the pamphlet before us, as well as certain other misgivings connected with the delicate nature of the particular subject treated in it, disappear, like the baseless fabric of a vision, on perusal of the preface. Here abounds testimony,—furnished too by the person best acquainted with Dr. Hocken, namely Dr. Hocken himself,—sufficiently satisfactory as to the author's purity of motives, and unusual fitness to discourse concerning chest diseases. In the first place, as respects Dr. Hocken's disinterestedness and abnegation of self on the one hand, and his divine charity and spirit of universal love on the other, we learn that "the author has put forth the following essay with a sincere desire to benefit *others*, and entirely without the prospect or probability of benefiting *self*." The italics are the author's own, and doubtless meant to signify that the words so printed were not transposed by an error of the press. It might be contended that there was some similarity between this exordium and the affectionate phraseology wherewith Messrs. Goss and Co. urge the claims of the 'Silent Friend,' the 'Ægis of Life,' &c.; but we doubt not the resemblance can only be regarded as accidental and utterly unconnected with any identity of purpose on the parts of Dr. Hocken and the distinguished advertisers. The author next announces the special refinement of his sympathy for "the consumptive,—falling victims, as many of them do, in the very pride of youth and beauty"—from which they that will it, may safely conclude his doors are as open to the sufferers as his heart to the sufferings. Changing the theme, Dr. Hocken expatiates on the "delicacy and accuracy in hearing," and upon the "taught and thoroughly practised ear," required for the investigation of the additional subject on which he has chosen to enlighten the public. But let not the reader despond, let him not doubt the perfect competency of Dr. Hocken, for the gentleman himself informs all whom it may concern, that "he believes his sense of hearing to be naturally excellent," as likewise that he "has studied under some of the best auscultators in the world." Goods recommended so strongly and conscientiously by their owner are surely worthy of a trial—let us look then into the body of Dr. Hocken's work.

First, what does naphtha do, what are the pretensions with which it is put forward? "The proper or medicinal naphtha," the writer avows, "is by far the most valuable remedy hitherto proposed for the *relief* and in some instances *cure* of this distressing malady;" it is not, however, to be regarded "as a *speedy* and certain *cure* in all forms and stages of phthisis." The last clause furnishes a valuable hint to Dr. Hocken's future patients, (we mean, of course, his *dispensary* patients,) not to lose confidence too soon, or give up attendance so long as they have time [or money?] to spend in improving their health, and swallowing naphtha.

Secondly, what is the naptha which Dr. Hocken patronizes? It is the same as that originally advertised, and which may still be had at many chemists' shops, placarded as that intended for the "cure of consumption." In other words, Dr. Hocken's naphtha is *the* naphtha, and not the other naphtha.

Thirdly, what is the evidence brought forward by Dr. Hocken that consumption is curable by naphtha, such as he has used? (We grant at once, if he pleases, *argumenti gratiâ*, that the value of the medicine should be tested by his own evidence, and that any one who has ventured to say nay, on his particular experience, was the victim of fraudulent chemists who would give the wrong naphtha.) Why a series of cases, in other words of facts: Now facts are well known to be stubborn things. Let us approach such as we are given, then, with becoming gravity.

The total number of cases referred to is twenty-three,* observed during a period of eleven months; and of these, seven (not six, as stated in the text, p. 67,) died; in other words, as nearly as possible, one third of a series of patients, treated on a certain plan, were cut off by the disease in less than the course of a year. Stating the fact in this broad way and avoiding all inquiry into the stage of the disease, or (what is infinitely more important in respect of prognosis,) the degree and manner in which the constitution generally has suffered, does it plead in favour of efficiency of the plan in question? Indubitably it does not: take a number of phthisical patients in all stages of the disease (eschewing, as carefully as Dr. Hocken did, those who might be considered, from the gravity of their state, actually moribund,) palliate their symptoms in the most ordinary way, and that two out of three will continue alive at the end of eleven months, is as certain as any proposition in medical statistics. But the result of Dr. Hocken's treatment actually falls below the average, when the fact is borne in mind that, first, in seven of these cases, according to his own admission, the disease existed in the earliest stage, and in some to an excessively limited extent; and, secondly, that in many of them the constitutional symptoms were far from being severe. Such is the first general inference we deduce from the contents of this pamphlet.

Our second general inference is one which we cannot for a moment apprehend will prove annoying to Dr. Hocken; such is the low estimate at which that gentleman rates his qualifications in the preface. It is this: that Dr. Hocken's work proves him to be perfectly incompetent to undertake the sound examination of a question in therapeutics. And for these reasons: it will be admitted, we presume, even by the patrons of naphtha, that the natural course and progress of a disease, the proportion of persons it kills, and the average time in which it effects their destruction, should be thoroughly known by him who attempts to show that any given system of treatment favorably modifies that natural course. Now Dr. Hocken would appear, from his never stating an opinion concerning such natural course, to be ignorant of its importance as an element in the settlement of therapeutical questions; if so, he is unfit to grapple with these. He may, however, contend, on the evidence of certain passages quoted from different sources, that he was acquainted with the natural tendencies of the disease towards cure or otherwise.* Let it be so; he continues not a whit the fitter guide in the matter. For one or other of two things: either he is unaware that to prove the value of a treatment he must demonstrate that the mortality and suffering caused by any disease are diminished by *that* treatment below the standards obtainable from *other* treatments; or he knows that such comparison would bear against him, and he deliberately abstains from instituting it. He cannot escape from one or other of these alternatives, and we freely accord him his choice—let him take his seat on which horn of the dilemma he pleases, he has shown himself incapable of understanding the character of a therapeutical problem.

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* Really twenty-two; for one patient (Case xix) was only seen on a first and single occasion.

Such are the general inferences to which we have been led by the examination of this pamphlet; we admit that they are insufficient to show the inefficacy of naphtha, though they do the incapacity of Dr. Hocken. Turn we then to the cases themselves.

*Series the first.* Here is a collection of seven cases of the disease in an early stage. Before analysing one or two of these we must observe upon the difficulty which attends the critical examination of the narratives of such cases. A set of physical signs are written down which signify the presence of tubercles in an incipient stage. Now the difficulty of satisfactorily ascertaining these signs is familiar to those who are accustomed to see chest affections. Dulness, to a slight amount especially, as Louis testifies, is a condition which must be discovered on repeated occasions and under various modes and manners of percussion, before we are justified in affirming its existence. Slight deviations from the natural condition of the respiratory murmurs are with equal difficulty to be substantiated. Yet when the signs are put down in black and white they signify the same, whether ascertained by a Laennec or an A. B.; and, unless by some collateral evidence proved to have been incorrectly observed, they must be accepted as actually existing conditions. In some instances groups of physical signs have been collected by curers of phthisis from systematic writers, and the prettiest pictures imaginable drawn;—the very perfection of the details betraying the manner in which the whole effect was produced. Our object in referring to these circumstances is to show that the slightest flaw which can be detected in the narrative of physical examinations, has much more importance than might appear on the surface.

Case I is entitled, "Tubercular deposition in the upper and anterior portion of the superior lobe of the right lung. *Complete recovery from the influence of naphtha.*" Here is a man, aged 23, complaining of indisposition, "hectic symptoms," (what these were we are allowed to divine,) pain behind the sternum and in the right shoulder, with slight cough, accompanied by expectoration of transparent mucus. He had suffered thus for about two or three months; and came of a phthisical father. The physical signs were "slight dulness of the sternal end of the clavicle and of the upper and sternal portion of the subclavicular region of the right side on percussion; morbidly increased resonance of the voice and heart-sounds; murmurs harsh, expiration prolonged." Now this man was probably tuberculous, admitting the signs (taken in connexion with the general symptoms) to have been correctly observed; what then of the naphtha? Ten minims of the liquid were ordered thrice daily in a glass of water, and by the 6th of April the patient had advanced so far as to "complain of much general indisposition and pain in the right shoulder." It does not appear that much had been gained at this period; but "the dulness on percussion was sensibly diminished and the murmurs less harsh,"—a statement rather difficult to reconcile with the previous account of the general and local symptoms. Let that pass, however. Still Dr. Hocken seems to have waxed doubtful of the influence of naphtha, for he now prescribed gentian internally and a *blister* to the chest; and followed up this notion a week later by keeping up "an eruption over the front of the chest with ung. antim. tart." On the 4th, pain and uneasiness were gone, "the cough and shortness of breath (nothing is said about this symptom before; is it now introduced to make things square?) greatly relieved;" little or no expectoration remained. But he continued "to be fatigued and to perspire freely from slight causes, and to be subject to attacks of faintness." The dulness had "entirely disappeared, and the murmurs became soft and normal." He felt well on May 11th, and continued so in September.

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* A case is transcribed, from an American journal, of supposed phthisis in which recovery took place after the use of simple cough mixtures. What then is the marvel that recovery should follow occasionally when a little naphtha is added to these, unless indeed this substance be actually detrimental. Is not Dr. Hocken in writing down this case in such a book as that before us, doing very much for himself as the sapient Dogberry would have had done for him? He absolutely is, if he believe that the case really was, as its heading promises, one of "spontaneous cure of phthisis." But the truth is that no particle of evidence exists that this particular case was otherwise than one of empyema.

As respects the condition of the physical signs, we more than doubt the alleged fact of the heart's sounds having been unduly audible when the amount of dulness on procussion was so slight as stated; probably Dr. Hocken imagined the alleged increase of loudness of the sounds in deference to systematic authors. The man was probably, as we have said, tuberculous; but if the result in *respect of physical signs* be correctly put down, there can be no question in the mind of any human being that the cause of the original dulness was not the tuberculous accumulation itself, but congestion of the adjoining structure temporarily induced by this. That the tuberculous disease itself had disappeared is not shown; for such an account of it as might give rise to local temporary congestion might be altogether inappreciable by physical signs. Again, symptoms of congestion disappear under the use of naphtha, gentian, a blister, and the powerful counter-irritation of tartarized antimony;—and this case is published as exemplifying "complete recovery from *tubercles* under the influence of *naphtha*." This savors either of imbecility of mind, or of impudence to a degree which it is painful to contemplate.

In CASE II we have the history of a man who had had hemoptysis, and the local and general symptoms of tuberculous disease. Flattening of the upper part of the chest, dulness on percussion; harsh respiration; increased vocal resonance, and unnatural clearness of the heart's sounds are all set down in comely order as confirming the diagnosis. The naphtha was commenced with on the 15th of January, and on the 14th of February (!!)

the report is, "states himself to be perfectly well. Dulness had disappeared; murmurs normal; voice equally resonant on both sides." "States himself to be perfectly well." Art thou a follower of Ignatius Loyola, Dr. Hocken, by profession? Or hast thou simply taken a hint from the pages of Eugène Sue's 'Juif Errant,' concerning the art of making a little bit of Jesuitism tell at a pinch? Thou dost not say, Dr. Hocken, that the man *was* well, but that he *stated* himself to be well. Why so have we known men and women, within the last year alone, to the amount of some half dozen, "state themselves to be perfectly well," which individuals had nevertheless cavities or softened tubercles in both lungs. Shall we inform fathers and mothers of families of these "*cures*," in a neat pamphlet bearing our address in prominent type, and telling them how we did it all with "vin. ipecac." and mutton-chops? But no matter for the patient's statement;—the physical signs cry aloud for the supremacy of naphtha. In one month all is changed. Unfortunately energetic Dr. Hocken goes a little too far, or in struggling to avoid Charybdis founders on Scylla. He tells us in truth that the voice was "*equally* resonant on both sides," when he had done with the naphtha. Now, as is well known, this vocal similarity on both sides can only exist when the natural resonance has either risen above par on the left side, or fallen below par on the right. On the first supposition there must have been consolidation on the left side, and if so the patient remained uncured; on the second, Dr. Hocken did more than remove the tubercles, he rarified the lung and would eventually, had the naphtha been continued, have produced, heaven knows what amount of shreddiness of the pulmonary substance. On the one supposition, Dr. Hocken either did not know how to tell, or choose to conceal the whole truth; while the other involves an absurdity which even he will probably shrink from acknowledging. Let him once again have his choice of difficulties, whichever he selects the responsibility of, he will probably not rise in the estimation of his brethren.

Such are the first two cases of this series; they are perhaps the *most* favorable of the set to Dr. Hocken's pretensions. The subject of Case V, after some slight improvement, was lost sight of (or at least nothing more is said of her) five months after the treatment was commenced; she was then in precisely the same state, if not worse, than when first seen. And yet in a tabular view of the cases at the end of the book, the "Results," in this instance, are stated to have been "*symptoms much relieved; physical signs improved.*" Case VI is another of "*cure* by *naphtha;*" the plain English of this phrase being that a tuberculous woman underwent much improvement in her local and general state after having taken naphtha, had a blister to the chest, kept up an eruption in the same situation with tartar emetic, and last, though we apprehend not least, spent a period of several weeks on two occasions in the country, her usual place of residence being one of the infectious purlieus of Soho!

In Case VII blisters were frequently applied, a tartar emetic eruption kept up, blood was taken twice by cupping from the nucha, (to relieve headach, it is stated); the woman had compound conium pill, twice daily, occasional doses of pulv. jalap. co., subsequently four grains of pill. galb. co. thrice daily; three minims of acid hydrocyan. dilut. ter die; at a later period a seton was applied to the nucha, still for the headach; shortly after eight minims of liq. op. sed. were added to each dose of medicine; and next a grain of quinine and three of hydr. c. cret. every night with a scruple of pulv. jalap. co. occasionally. After five months of this treatment (she had an affection of the thumb consequent on a burn,) she was sent to Margate with the sounds on percussion alike on both sides, and the murmurs perfectly normal. Now in point of fact the woman, when first seen, had congestion and bronchitis of the apices, (tuberculous, we question not;) there was sibilant rhonchus to prove this. Time, aided by the heterogeneous treatment adopted (especially the counter-irritation) removed this; and the signs consequently improved. But suppose the patient was actually cured of tuberculous disease, why might not the favorable result have been produced by the seton, the prussic acid, the cupping, the opium, the blisters, or the tartar emetic ointment, singly or combined? Why the first two of these agents have actually had their praises sung (as warmly and as honestly as those of naphtha by Dr. Hocken,) as actual *specific cures* for the disease. But whether they be specific or not is of little consequence. It is enough for our purpose that we find a benefit deliberately ascribed to naphtha, of which there is no shadow of evidence to prove that substance really the author; and all this is done with a coolness and an air of innocent conviction that satisfy us Dr. Hocken might possibly, had he chosen the same walk as that worthy, have eclipsed even Robert Macaire.

The writer "now passes on to consider the operation of medicinal naphtha in more advanced cases of phthisis, but still before the occurrence of softening." In the first of these cases we find, that on the 22d of June there were flattening, impeded motion, very marked dulness, bronchial respiration, diffused bronchophony, great increase of clearness of the heart's sounds, mucous rhonchus with a hollow somewhat metallic character, &c. and on the 21st of September there was no dulness on percussion, and the respiratory murmurs sounded exactly alike on both sides. Now this might pass muster, but when Dr. Hocken adds "expiration being audible on both sides and slightly more prolonged than usual,—*somewhere about one third the length of inspiration, instead of about two to ten*," we confess we have misgivings, and the blight of suspicion crosses our minds. Had Dr. Hocken made himself practically acquainted with the relative duration of inspiration to expiration, he would have known that Fournet's ratio of ten to two was one of the errors into which this accomplished auscultator fell; he evidently supposed that that ratio was generally admitted, and endeavours to produce the impression that he had ascertained it himself. Besides, observe the fine drawing; the confidence and ease with which a ratio of three to one is distinguished from one of five to one! Here indeed we recognize the "taught and thoroughly practised ear." But when we turn to case the ninth, we find (as will presently be seen) such further evidence of the powers of Dr. Hocken's "taught and thoroughly practised ear," as leads us to regard his pretension to distinguishing ratios, very much as we should the presumption of a school-boy who, on bringing his first rule-of-three sum to a conclusion, forthwith writes to his mamma concerning his facility in solving quadratic equations.

CASE IX is one of tuberculous disease considerably more serious in character and advanced in progress. The subject of it, a female, had been under treatment about four months, when (on the 24th of September,) she was discharged in a worse general state, (for emaciation was then on the increase, and the tongue covered with aphthæ,) than when first seen. Yet the "results" of this case, given in the table at the end, are "*great relief to general symptoms*, and improvement of physical signs with occasional relapses." But this is not all, there was further news of the case on the 3d of October. And what news? Was the patient then recovered, and did she present an expiratory murmur bearing the proportion of "one to three" to the inspiratory? No. Was she improving then? No. Was she even in *statu quo?* No. She was simply in that condition in which even Dr. Hocken must have failed to detect respiratory murmurs in the ratio of three to one,—she was dead. Dead! What in scarcely more than a little week, after all had been (the table says it,) going on so well, the general symptoms *greatly relieved*, the physical signs *improved*? Aye dead, in spite of all this. And dead, not in consequence of any intercurrent attack in a distant organ, not from a sudden increase in severity of any symptom or symptoms, but simply and naturally from the ordinary progress of the disease; the woman "sank." But, poor woman, there was not an end of her yet; her "*case*," (as if in mockery of *herself*) must serve to swell pages sufficiently well calculated to entrap the unwary and bamboozle the ignorant,—from the grave she was summoned to bear mute witness to the powers of naphtha, and to aid in enticing sufferers like herself to confide in the honesty and skill of its vendors.

But let us turn to a less painful view of this case. On the 22d of September, we are informed concerning the physical signs as follows: "The sound on percussion alike on both sides, *slightly duller* (under the clavicles) *than the upper part of the mammary region.* Inspiratory murmurs over the dull portions anteriorly on the right side SLIGHTLY HARSHER *than natural; no* expiratory murmur to be heard; a *few moist crackling sounds* heard over a limited space, *beneath the clavicle near the sternum*; voice and heart not excessively resonant." Now this was the state upon which the statement of "improved physical signs" is based, and a very pretty improvement it doubtless signifies, when compared with those described as existing when the patient was first seen. But hear the anatomical state of things to which these "improved signs" (as shown at the post-mortem examination,) responded. "*Left lung.* Pleural surfaces adherent over the whole upper posterior by bands of false membrane, which admitted of being broken down by the finger, and at the apex of the superior lobe very closely by a thick tubercular layer..... A *complete cap or hollow cone of tuberculous matter was left adherent at the apex*, when the lung was removed. The lung itself was *a mass of softening and softened tubercles*....the *only sound portion* being over a *small space inferiorly and posteriorly.* The *inferior lobe was softened throughout*, and dripping with pus....There was *much purulent fluid* in the *lower lobe of the lung*, but many of the tubercles were less softened than in the upper lobe. *Right lung.* The *pleural surfaces* were adherent in an *exactly similar manner*, here as *on the left side*, and the removal of the lung left the *same hollow cone of tuberculous matter beneath the clavicle.* There was *a small portion of œdematous, but crepitant and otherwise healthy, lung* situated superiorly and anteriorly. All *other parts of the lung were loaded with softening tubercles*, but free from caverns." All this would have been almost incredible, had we it not in black and white before us; the number and variety of contradictions between the "improved" physical *signs* and the actual physical *state* are almost inconceivable. Now as we are absolved, we presume, from imagining a miracle to have occurred, and the ordinary physical effects of physical causes to have absented themselves, we find ourselves reduced per force to the very painful dilemma of believing either that Dr. Hocken invented the list of "*improved*" signs, or that he is as ignorant as a sucking babe of physical diagnosis. If Dr. Hocken escape with flying colours from this dilemma, we will, for the remaining term of our natural life, venerate him as the—most ingenious of consumption-curers.

CASE XII furnishes us with the naphtha-cure in another of its phases. A woman after a *week's attendance* "does not feel better in her general health; and grows so exhausted from waiting with the other patients, that she feels herself unable to attend;" but she coughed less and slept better. Might not accident or morphia have done as much? No matter; the table furnishes the case as one of "improvement."

CASE XIII is interesting from the intimation it furnishes that the author left town "temporarily" a week after he had commenced giving naphtha to Mary Anne Paget; and that the said Mary Anne, "unwilling to forego the benefits of the naphtha treatment, placed herself under the *private care* of Dr. Hastings." Dr. Hocken could not of course have given her a prescription to be used during his "temporary absence."

But *ohe! jam satis*, in the way of analysis, both for our readers and ourselves. "In certain quarters the employment of naphtha," says Dr. Hocken, "has been regarded merely as a piece of quackery and imposition, and I felt disposed to regard it as such myself, before I convinced myself of its real value." This is a striking sentence; from it we learn totidem verbis, that Dr. Hocken continued for a certain time, (the duration of which is not specified,) to regard the original patron of naphtha as a quack and impostor. This is the unkindest cut of all for poor Dr. Hastings: the malignity of envious reviewers, abashed by his superiority, and confounded by his successes, might be understood,—they might be expected, from simple envy, to stigmatize him as of doubtful honesty; but "mine own familiar friend, in whom I trusted," who knows me thoroughly, who has watched my manœuvres with that tender anxiety for my interests, characteristic of a dispensary colleague, and who now seeks to fatten on my ideas!—he to assail me with the venom of vituperation! Console thyself, Dr. Hastings; Dr. Hocken will now make up for past delinquencies, for has he not joined in partnership with thee for better for worse, and as we know on the one hand that "birds of a feather, &c.," and on the other we learn, from Dr. Hocken's preface what must, on the principle of that wise saw, be the character of him with whom its author associates, we can predict justice will be done thee in the next pamphlet, as a man that careth not for self, but overfloweth with the spirit of universal love,—that hateth quackery, and proveth his devotion to pure science by—pouring medicinal naphtha over fragments of tubercle on the object-glass of a microscope!

Probably the first clause of the sentence just quoted is levelled at ourselves among others. Under this apprehension, we may as well observe that neither we, nor any honest individual, could in the present state of knowledge object to the "*employment* of naphtha," or regard such employment as quackery. But we do object to, and stigmatize as the quintessence of quackery, the publication of books, in which truth is utterly perverted, and in which, with views that may without difficulty be conceived, naphtha is made to appear capable of producing results which no iota of evidence corroborates.

Of a piece with this cunning version of the real grounds on which our detestation of such books as the present rests, is the insinuation that regular practitioners regarded consumption as a disease necessarily running a steady and unchanging course to death. Here again is an utterly false and perverted view of the reality. No, Dr. Hocken, (and you know this as well as we do,) if phthisis did not, as we have always proclaimed it does, *frequently* stop short *temporarily* in its course, *sometimes* undergo suspension for a *lengthened period*, and in *very rare cases* become *permanently* arrested, (all this in the natural course of things,) phthisis would cease to be one of the strongholds of charlatanism. *We* have always encouraged, instead of attempting to repress, honest attempts to improve the treatment of consumption; but it does not follow from this, as a precise logical induction, that we are called on to hold out the right hand of fellowship to Hastings, Hocken, and Co.

We are tempted to believe, or perhaps rather to hope, that Dr. Hocken has been betrayed to the production of this pamphlet, less by a deliberate desire to mislead, than by a restless spirit of vanity, and craving for notoriety. The latter indeed seems to be with him a passion. Four pages are stitched into the work, filled with every little scrap of commendation or simply courteous mention, gathered from every possible source, whether distinguished or obscure, that has been bestowed upon any one of Dr. Hocken's literary productions. His success in this direction proves that he would in all likelihood be an excellent person to find a needle in a bundle of straw, but does not appear to us destined otherwise to raise his reputation.

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## ART. XVI.

*Vestiges of the Natural History of Creation.—Lond.* 1844. 8vo, pp. 390.

THIS is a very beautiful and a very interesting book. Its theme is one of the grandest that can occupy human thought—no less than the creation of the universe. But neither its interest nor its grandeur would of themselves claim our notice, in this Journal, were not the science of Physiology called in to play an important part in the elaboration of the author's theory. Therefore it is, mainly, that we propose to make it the subject of a critical analysis; though we are also influenced by the abstract desire to place before our readers matter for their contemplation, which cannot fail at once to elevate, to gratify and to enrich the mind. It has always been one of the boasts of our noble profession that it touches and blends with every science; and we should be sorry that our humble efforts should at any time be wanting to stimulate its professors to exertions that might still justify the boast.

It will be our duty to show that the "Vestiges" contains many defects and not a few errors; but it will also be our delight to prove, from its own eloquent pages, that its beauties and its merits are more numerous still.

In the First Chapter,—"*On the Bodies of Space, their Arrangement and Formation*,—a rapid but masterly sketch is given of the Nebular Hypothesis, as developed by Herschel (the elder) and Laplace. As it is probable that many of our readers may be unpossessed of a clear conception of this doctrine, and as an acquaintance with it is essential to the comprehension of our author's subsequent argument, we shall endeavour to convey to them, in as few words as possible, an idea of its nature.

When a powerful telescope is directed to the heavens, not only does it bring into view innumerable multitudes of stars, which were previously invisible, but also many cloudy patches, of varying forms, and of greater or less extent, which are termed *nebulæ*. Of these nebulæ, some may be *resolved*, by telescopes of still higher power, into distinct stars; just as a telescope of very moderate power suffices to *resolve* the milky way, which presents a nebular appearance to the naked eye. There are others, which have been hitherto considered *irresolvable*; but which, by the aid of telescopes of still higher power, will be most probably resolved like the preceding. These clusters seem to be distributed through space at varying distances; and every one of them may be regarded as a repetition of that firmament of our own, which includes *all the distinct stars* with which the telescope makes us acquainted.—But besides *these* nebulæ, there is a class distinguished by certain peculiarities of appearance, which seem to preclude the notion of their being formed by the aggregation of distinct stars; and the idea was propounded (we believe) by Sir W. Herschel, that they consist of a diffused self-luminous matter. In some of these, small bright *nuclei* present themselves, studding their surface here and there; as if the diffused matter was becoming condensed in certain points. And in others, this condensation has proceeded so far, as almost to break up the entire mass into divisions, every one containing a nucleus. These seem to be stages of transition towards the production of distinct stars.

Again, it was observed by Sir W. Herschel, that among the fixed stars of our own firmament, there are considerable variations of appearance: some of them being definite points of clear and brilliant light; others being surrounded with a slight luminosity; others, again, having a more extended luminous atmosphere; in others the central nucleus being scarcely visible; and others presenting no other appearance than that of a circular disc, of which the light, faint at the edges, *gradually* increases in intensity towards the centre. Hence it was supposed by Sir W. Herschel, that all the bodies composing the stellar universe have been formed by the gradual condensation of *nebular matter;* and that the appearances just described indicate so many stages in this condensation.

How far La Place was indebted to Herschel for this idea, we do not know; but, starting from the same fundamental conception of a diffused *nebular matter* as the original condition of the universe, he set himself to calculate, by the aid of mathematical formulæ, in what manner the condensation of this matter, by the mutual attraction of its particles, would operate in producing,—not merely suns or stars,—but *systems* of planets revolving round the suns, and satellites around these primaries. It can easily be shown by reference to well-known physical phenomena, as well as by mathematical investigation, that the *rush* of the nebular matter towards a centre, would produce a rotatory motion in the mass,—

that the rapidity of this motion would increase, as, by the condensation of the mass, its bulk diminishes,—that, in this process of condensation, the outer part would be very probably thrown off in the form of a ring, —that this ring, continuing to revolve at the rate which the whole mass possessed at the period of its detachment, *might possibly* remain as such, or *might* break into several portions, but would *most probably* become itself condensed into one mass, by the attraction of its whole material towards the thickest part of it, thus forming a Planet,—that this process would probably be repeated several times, thus forming a series of planets, and that, at last, the process of condensation would end in the formation of a centre or Sun, revolving on its axis at a rate more rapid than that of the orbital revolutions of any of its attendant planets, and of a series of planets revolving around it in times bearing a certain definite proportion to their distances. Further, in the condensation of the detached ring into a globular mass, the rush of nebular matter towards the point of greatest density would impress on *it* also a rotatory motion, whilst its orbital revolution around the first centre continued; and in the process of *its* condensation, rings would be detached, which also would probably condense into globular masses, having a revolution round it and a rotation on their own axis, as in the preceding case,—thus forming the Satellites of the primary planets.

All this, it will be seen, has such a perfect correspondence with the actual condition of our solar system, that it has the appearance of being an hypothesis constructed with express reference to its phenomena; but so far is this from being the case, that these phenomena might be foretold with almost the same accuracy as *any* Astronomical prediction, in regard to any other mass of nebular matter in process of condensation; and we may fully calculate upon finding the very same laws holding good, in regard to the proportions between the times and the distances of revolution, in *any other* planetary system,—should the improvement in our means of observation ever allow such to be discovered,—as in our own. Even the apparent exceptions,—those furnished by double and triple stars for example, which are supposed to result from the consolidation of the first or primary nebular mass around two or three distinct centres, instead of one, the bodies thus formed having a revolution around their common centre of gravity,—that presented in the consolidation of the ring thrown off between Mars and Jupiter, into four small planets,—and that afforded by the persistence of the annular form, in the ring detached from the body of Saturn, during its condensation, subsequently to the production of its nearest satellite,—add strength to the case; since they are not only accounted for by it, but are shown to be *probable* occurrences.—Further, there is evidence that our sun, if seen from afar, would present the appearance of a slightly-nebulous star; the phenomenon termed the zodiacal light, appearing to indicate, that he is surrounded by a lenticular band of self-luminous matter of extreme tenuity, extending beyond the orbit of Venus.

A very important confirmation of this hypothesis has been recently afforded by the calculations of M. Comte; who has set himself to determine whether, supposing that the mass which is now condensed in the Sun could be again expanded as far as the orbit of Mercury, its time of rotation would be the same with that, in which Mercury now executes his orbital revolution; and to solve the same problem in regard to the times of revolution of all the other planets round the sun, and of the secondaries round their primaries. The coincidence between the *calculated* and the *observed* time is so close in the case of the moon, that the two agree within an hour or two. The difference is somewhat greater in the case of the planets, but still does not exceed a forty-fifth part of the amount, and it may be fairly imputed to the neglect or inaccuracy of some small data involved in the calculation.

This is an outline view of the celebrated Nebular hypothesis; which, we believe, the greatest minds of our time feel disposed to regard as the expression of the *probable* history of the production of the universe as we now behold it. Our author, perhaps, expresses himself a little more strongly on the subject than *we* feel justified in doing, when he says that "the nebular hypothesis is supported by so many ascertained features of the celestial scenery, and by so many calculations of exact science, that it is impossible for a candid mind to refrain from giving it a cordial reception, if not to repose full reliance upon it, even without seeking for it support of any other kind." (p. 20.) If it were *certain* that the data which have been assumed, as the results of observation, are mainly correct, we should be quite ready to receive the hypothesis with the cordiality which he claims for it; but at a time when the scientific world is awaiting, with anxious expectation, the revelations of a new instrument of surpassing perfection (Lord Rosse's telescope), we deem it unwise to assume that there is a single clearly-established example of the existence of uncondensed nebular matter; every improvement in the construction of the telescope having led to the *resolution* of nebulæ, which were previously deemed irresolvable. And it is, we presume, on this account, that those who are most entitled to give an opinion upon the subject, express themselves with caution, and decline to receive the doctrine in any other way than as a *probable* hypothesis. But even if *this* cosmogony should be overturned by the results of newer observations, we cannot doubt that another of equal simplicity and comprehensiveness will be substituted for it; and in the mean time it may be entertained as the nearest approach yet made by the human mind to the conception of the mode, in which the physical universe has been called into being.

But does this explanation in any way preclude the idea of the operation of Creative power, in the formation of these countless myriads of suns and systems, of which astronomy takes cognizance? It is said to have been framed by La Place, with the express purpose of "doing away with the necessity for a Creator," in conformity with the strangely unphilosophical spirit prevalent in his time, which considered the belief in a Deity as an antiquated fiction, adapted only to the credulity of the ignorant, and the knavery of the interested. We cannot but deeply lament, that the author of the 'Nebular Hypothesis,' and the 'Demonstrator of the Stability of the Solar System,' should have been so blind to the real tendency of his views; and that, after having ascended in sublime generalization so near to the First Cause, he should have made no attempt to ascend still higher, by inquiring into the origin of nebular matter itself, the source of its properties, and the conditions under which these came into action. So far from admitting the atheistical tendency which timid religionists have attributed to the 'Nebular Hypothesis,' we consider it the grandest contribution which Science has yet made to Religion; by giving us a clearer and more definite comprehension, than any other point of view affords to us, of the omnipotence and omniscience of the Creator. We *feel* that the mind, which could at a glance foresee the whole operation of the mutual attraction of the particles of nebular matter, as it presents itself in our system alone, and which could provide, as the necessary result of that same principle, the wonderful system of checks and counterchecks that ensures its stability, must have a capacity far beyond caparison with our own; and when it is considered that the wide sweep of Uranus, nearly twelve thousand millions of miles in length, includes what is but a point in the vast universe of which we take cognizance, and that in every part the same phenomena are probably going on, we *feel* that the mind which devised all this can be nothing less than Infinite.

Taking the truth of the 'Nebular Hypothesis' for granted, our author founds upon it two inferences, which constitute the basis of his subsequent argument. The first of these has reference to the simple question of the *history* of the universe; the second to the *cause* of the sequence of phenomena which it embraces. "The first idea," he remarks (p. 21,) "which all this impresses upon us is, that the formation of the bodies in space is *still, and at present, in progress.*" We shall presently see his application of this idea, and shall not now dwell upon it. We shall give his second deduction in his own clear and striking language.

"Another and more important consideration arises from the hypothesis, namely, as to the means by which the grand process is conducted. The nebulous matter collects around nuclei by virtue of the law of attraction. The agglomeration brings into operation another physical law, by force of which the separate masses of matter are either made to rotate singly, or, in addition to that single motion, are set into a coupled revolution in ellipses. Next centrifugal force comes into play, flinging off portions of the rotating masses, which become spheres by virtue of the same law of attraction, and are held in orbits of revolution round the central body by means of a composition between the centrifugal and gravitating forces. All we see is done by certain laws of matter, so that it becomes a question of extreme interest, what are such laws? All that can yet be said in answer, is, that we see certain natural events proceeding in an invariable order under certain conditions, and thence infer the existence of some fundamental arrangement, which, for the bringing about of these events, has a force and certainty of action similar to, but more precise and unerring than, those arrangements which human society makes for its own benefit, and calls laws. It is remarkable of physical laws, that we see them operating on every kind of scale as to magnitude, with the same regularity and perseverance. The tear that falls from childhood's cheek is globular through the efficacy of that same law of mutual attraction of particles which made the sun and planets round. The rapidity of Mercury is quicker than that of Saturn, for the same reason that, when we wheel a ball round by a string, and make the string wind up round our fingers, the ball always flies quicker and quicker as the string is shortened. Two eddies in a stream, as has been stated, fall into a mutual revolution at the distance of a couple of inches, through the same cause which makes a pair of suns link in mutual revolution at the distance of millions of miles. There is, we might say, a sublime simplicity in this indifference of the grand regulations to the vastness or minuteness of the field of their operation. Their being uniform, too, throughout space, as far as we can scan it, and their being so unfailing in their tendency to operate, so that only the proper conditions are presented, afford to our minds matter for the gravest consideration. Nor should it escape our careful notice, that the regulations on which all the laws of matter operate, are established on a rigidly accurate mathematical basis. Proportions of numbers and geometrical figures rest at the bottom of the whole. All these considerations, when the mind is thoroughly prepared for them, tend to raise our ideas with respect to the character of physical laws, even though we do not go a single step further in the investigation. But it is impossible for an intelligent mind to stop there. We advance from law to the cause of law, and ask, What is that? Whence have come all these beautiful regulations? Here science leaves us, but only to conclude, from other grounds, that there is a First Cause, to which all others are secondary and ministrative, a primitive almighty will, of which these laws are merely the mandates. That great Being, who shall say where is his dwelling place, or what his history! Man pauses breathless at the contemplation of a subject so much above his finite faculties, and only can wonder and adore!" (pp. 23-6.)

We can scarcely imagine that any sane mind, seriously attentive to the question, can take any other view of the character of the Laws of Nature, than that which is so well set forth in the foregoing extract. They are but the expressions of the will of that Divine Being, whose immutability is nowhere more clearly manifested, than in that continuance of the same mode of action,—not merely through the limited period of human experience, but, as we can now comprehend, from the very commencement of the present system of the universe,—which enables us to discern somewhat of the plan on which he acted. If every action of the Creator were to be *immediately* prompted by *present* contingencies, instead of being the result of predetermination based on perfect knowledge of the future, there could be no *law*. If that knowledge of the future were, like man's, imperfect,—though we might trace a general principle when the arrangements were viewed in their totality, the *details* would have much of that unsteadiness and occasional want of consistency, which we perceive in the actions of even the best-regulated human mind. The *laws* would be made to bend to the necessities of the time; and new interpositions would be continually necessary to correct the errors which would arise in the working of the machine. So far, however, is this from being the case, that, in the only instance in which we have been able, from the simplicity of the phenomena, to attain to a complete generalization of them, we have every reason to believe that *the same laws have been in operation from the beginning*, or, in other words, that the work of creation was commenced upon a plan so perfect, as to need no subsequent change.

But whilst we deprecate the idea of constant *interference*, we must not lose sight of the continual *sustaining action* of the Deity. The tendency of some of those philosophers who have most profoundly investigated the phenomena of Nature, has been to imagine that the creation of matter, endowed with certain properties, and therefore subject to certain actions, was the *final* act of the Deity, instead of the *mere commencement* of his operations, as far as the present system of things is concerned. We need not point out how inconsistent this doctrine is with all that Revelation teaches us of the Creator's dealings; but we shall simply say in regard to it, that it appears to us equally opposed to the dictates of sound philosophy. For if it be admitted that matter owes its origin and properties to the Deity, in other words, that its *first* existence is but an expression of the Divine will, what is its *continued* existence but a continued expression of that same will? The idea to which we are objecting may appear to derive support from a fancied analogy between Divine and human laws; it being supposed that the Divine laws, like the human, having been once enacted, are left to work out their results, not only without the interference, but even without any further concern on the part of the Supreme Power. But so far is even this imperfect analogy from supporting such a view, that it runs in direct opposition to it. For what is a human law, but an expression of the will of the governing power; and what is its action upon the community, but the constant though silent operation of that will? If a sudden convulsion overturn the governing power, the laws cease to exist as controlling agencies; all is anarchy and confusion. If the law is inadequate to produce the desired effects, the human legislator modifies or changes it; but with the Divine legislator, no modification has ever been needed; all the future results of the plan having been so completely foreseen in the first instance, that the plan could be arranged to meet them, just as if they were all present.

Let us sum up with the remark, that the term Law of Nature cannot be understood, either logically or philosophically, as anything else than a *human expression* of the plan or principle, which seems to have been acted on by the Creator in the production of the phenomena with which our limited experience brings us acquainted. *We* have no right, limited alike in our powers of observation, and in the use of our reasoning faculties, to assume that the laws which *we* deduce from our experience are those by which the Deity has thought proper to restrict his operations.

We know not where a more beautiful illustration can be drawn from a scientific operation, in aid of the comprehension of a grand religious truth, than that which Mr. Babbage has adduced in his (so-called) 'Ninth Bridgewater Treatise,' with reference to this subject, and to the question of miracles which grows out of it. This illustration has been quoted by our author in a later part of his work; but we shall introduce it here, as more apposite to the *general* question we are discussing,—the real character of natural laws. We presume that most of our readers are acquainted with the *name* at least of Mr. Babbage's calculating machine; an engine which is put in action by ordinary mechanical means, but which is so constructed as to bring up, by the turning of a wheel, any series of numbers that can be arranged on a definite plan, such as those required for mathematical tables, &c. An observer, watching the numbers as they are presented, may be able to discover the plan on which they are arranged, or, in other words, the *law* on which the machine is acting. Now by a particular adjustment of the machine, it may be made to bring up the consecutive numbers, 1, 2, 3, 4, 5, &c. up to *one hundred millions* (or any other amount); and it is pertinently asked by Mr. Babbage, whether any one who has observed a hundred millions of consecutive phenomena, all following the same law, could avoid the belief, that the operation will continue on the same plan. True to this vast induction, the succeeding term will be one hundred million and one; but the next number, instead of being one hundred million and two, is one hundred million *ten thousand* and two. The next term is larger than we should have anticipated, by *thirty* thousand; the next by *sixty* thousand; the next by *a hundred* thousand; the next by *a thousand thousand;* and so on. Here we might say that a *new law* has come into operation; and a little observation might show us the nature of this law, which is, that the *differences between the tens of thousands* of each two consecutive terms, increase in the same regular proportion as the units of the preceding numbers; for the tens of thousands being represented by 1, 3, 6, 10, 15, 21, 28, &c. their differences are 2, 3, 4, 5, 6, 7, &c. If we continue to observe the numbers presented by the machine, we shall find that for a hundred or even a thousand terms, they continue to follow this new law; but after watching them for 2761 terms, we find that the law fails in the case of the 2762d term. If we continue to observe, we shall then discover another law coming into operation, also dependent upon a similar sequence of numbers, but in a different manner. This will continue through about 1450 terms; when a new law is again introduced, which extends over about 950 terms; and this, too, like all its predecessors, fails, and gives place to other laws, which appear at different intervals,—all resulting from the *first adjustment* of the machine. "Now it must be observed," says Mr. Babbage, "that *the law—that each number presented by the engine is greater by unity than the preceding number*, which law the observer has deduced from an induction of a hundred million instances, *was not the true law that regulated its action;* and that the occurrence of 100,010,002 at the 100,000,002d term was *as necessary a consequence of the original adjustment, and might have been as fully foreknown at the commencement, as was the regular succession of any one of the intermediate numbers to its immediate antecedent.* The same remark applies to the next apparent deviation from the new law, which was founded on an induction of 2761 terms, and also to the succeeding laws, with this limitation only,—that, whilst their consecutive introduction at various definite intervals is a necessary consequence of the mechanical structure of the engine, our knowledge of analysis does not enable us to predict the periods themselves, at which the more distant laws will be introduced." How humbling to the pride of man's reason to find, that even the work of his own hands can execute operations, which his boasted intellect cannot fathom!

We trust that we have now dwelt sufficiently on this topic, to develope the view which we have ourselves long entertained, and which is the fundamental idea of the work before us;—that we cannot really attribute *infinite* knowledge and *infinite* power to the Creator, unless we believe that in the plan of creation which He first laid down, *every* contingency was foreseen and provided for; so that the continued operation of the *same* plan has been all that has been required for the perfect working of the machine; the very existence, as well as the actions, of which are dependent upon His sustaining power, *but all* the operations of which, however changeful and uncertain to our limited apprehension, are to His all-seeing glance uniform and definite. And as a corollary to this proposition we would add, that we must not place too much confidence in any law deduced from the results of our own limited experience; when this appears to run counter to the general plan of the Divine operations.

Returning now to our author, we shall briefly follow him through the succeeding chapters, in which he prepares the way for the development of his hypothesis respecting the creation of organized beings. He first takes a brief survey of the "constituent materials of the earth, and of the other bodies of space;" in which he argues from the Nebular hypothesis, that these must be of the same kind throughout, although they may differ in combination and in mode of aggregation; and surmises that, as each planet is passing, like the earth, through a series of changes, dependent upon the gradual cooling of the mass, we have no reason to suppose that it must ever remain, or have remained, destitute of organic life, merely because its present condition seems to us to be inconsistent with the idea. His general views on this subject will be gathered from the two following extracts.

"The earth and all its various substances have at present a certain volume in consequence of the temperature which actually exists. When, then, we find that its matter and that of the associate planets was at one time diffused throughout the whole space, now circumscribed by the orbit of Uranus, we cannot doubt, after what we know of the power of heat, that the nebulous form of matter was attended by the condition of a very high temperature. The nebulous matter of space, previously to the formation of stellar and planetary bodies, must have been a universal fire-mist; an idea which we can scarcely comprehend, though the reasons for arriving at it seem irresistible. The formation of systems out of this matter implies a change of some kind with regard to the condition of the heat. Had this power continued to act with its full original repulsive energy, the process of agglomeration by attraction could not have gone on. We do not not know enough of the laws of heat to enable us to surmise how the necessary change in this respect was brought about, but we can trace some of the steps and consequences of the process. Uranus would be formed at the time when the heat of our system's matter was at the greatest, Saturn at the next, and so on. Now this tallies perfectly with the exceeding diffuseness of the matter of those elder planets, Saturn being not more dense or heavy than the substance cork. It may be that a sufficiency of heat still remains in those planets to make up for their distance from the sun, and the consequent smallness of the heat which they derive from his rays. And it may equally be, since Mercury is twice the density of the earth, that its matter exists under a degree of cold, for which that planet's large enjoyment of the sun's rays is no more than a compensation. Thus there may be, upon the whole, a nearly equal experience of heat amongst all these children of the sun. Where, meanwhile, is the heat once diffused through the system, over and above what remains in the planets? May we not rationally presume it to have gone to constitute that luminous envelope of the sun, in which his warmth-giving power is now held to reside? It could not be destroyed—it cannot be supposed to have gone off into space—it must have simply been reserved to constitute at the last a means of sustaining the many operations of which the planets were destined to be the theatre.

"The tendency of the whole of the preceding considerations is to bring the conviction that our globe is a specimen of all the similarly-placed bodies of space, as respects its constituent matter, and the physical and chemical laws governing it, with only this qualification, that there are *possibly* shades of variation with respect to the component materials, and *undoubtedly* with respect to the conditions under which the laws operate, and, consequently, the effects which they produce. Thus, there may be substances here which are not in some other bodies, and substances here solid may be elsewhere liquid or vaporiform. We are the more entitled to draw such conclusions, seeing that there is nothing at all singular or special in the astronomical situation of the earth. It takes its place third in a series of planets, which series is only one of numberless other systems, forming one group. It is strikingly—if I may use such an expression—a member of a democracy. Hence, we cannot suppose that there is any peculiarity about it which does not probably attach to multitudes of other bodies—in fact, to all that are analogous to it in respect of cosmical arrangements." (pp. 30-3.)

"The characteristics of the moon forbid the idea that it can be at present a theatre of life, like the earth, and almost seem to declare that it never can become so. But we must not rashly draw any such conclusions. The moon may be only in an earlier stage of the progress through which the earth has already gone. The elements which seem wanting may be only in combinations different in those which exist here, and may yet be developed as we here find them. Seas may yet

> fill the profound hollows of the surface; an atmosphere may spread over the whole. Should these events take place, meteorological phenomena, and all the phenomena of organic life, will commence, and the moon, like the earth, will become a green and inhabited world." (p. 39-40.)

On this last, however, we must take leave to remark, that the laws of heat would seem to indicate that the moon *has already passed* through the present condition of the earth; since smaller bodies cool faster (cæteris paribus) than larger. The author has already adverted to this principle, in noticing the probability, that the larger and more distant planets, whose density is much less than that of the smaller and nearer ones, are in an earlier stage of condensation, and that the amount of heat still contained in their own masses may compensate in some degree for the deficiency of solar rays.

The history of the formation of the present crust of the earth, and of the introduction of living beings upon its surface, as revealed by the researches of modern geology, is then presented, in a series of masterly sketches of the condition of the globe and of its inhabitants at the principal periods. Many interesting, and, we believe, novel suggestions are offered in the course of this outline, which display the acuteness and fertility of the author's mind; but we must not stop to dwell upon them, as they have no direct bearing on the general argument. The following is the author's beautifully expressed summary:

> "Thus concludes the wondrous chapter of the earth's history, which is told by geology. It takes up our globe at a period when its original incandescent state had nearly ceased; conducts it through what we have every reason to believe were vast, or at least very considerable, spaces of time, in the course of which many superficial changes took place, and vegetable and animal life was gradually developed; and drops it just at the point when man was apparently about to enter on the scene. The compilation of such a history from materials of so extraordinary a character, and the powerful nature of the evidence which these materials afford, are calculated to excite our admiration, and the result must be allowed to exalt the dignity of science, as a product of man's industry and his reason.
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> "If there is anything more than another impressed on our minds by the course of the geological history, it is, that the same laws and conditions of nature now apparent to us have existed throughout the whole time, though the operation of some of these laws may now be less conspicuous than in the early ages, from some of the conditions having come to a settlement and a close. That seas have flowed and ebbed, and winds disturbed their surfaces, in the time of the secondary rocks, we have proof on the yet preserved surfaces of the sands which constituted margins of the seas in those days. Even the fall of the wind—slanted rain is evidenced on the same tablets; the washing down of detached matter from elevated grounds which we see rivers constantly engaged in at the present time, and which is daily shallowing the seas adjacent to their mouths, only appear to have proceeded on a greater scale in earlier epochs. The volcanic subterranean force, which we see belching forth lavas on the sides of mountains, and throwing up new elevations by land and sea, was only more powerfully operative in distant ages. To turn to organic nature, vegetation seems to have proceeded then exactly as now. The very alternations of the seasons has been read in unmistakable characters, in sections of the trees of those days, precisely as it might be read in a section of a tree cut down yesterday. The system of prey amongst animals flourished throughout the whole of the prehuman period; and the adaptation of all plants and animals to their respective spheres of existence was as perfect in those early ages as it is still." (p. 147.)

After a few observations on the conditions which probably modified the operation of the more general laws at different periods, he thus continues:

> "In pursuing the progress of development of both plants and animals upon the globe, we have seen an advance in both cases, along the line leading to the higher forms of organization. Amongst plants, we have first sea weeds, afterwards land plants; and amongst these, the simpler (cellular and cryptogamic) before the more complex. In the department of zoology, we see zoophytes, radiata, mollusca, articulata, existing for ages before there were any higher forms. The first step forward gives fishes, the humblest class of the vertebrata; and, moreover, the earliest fishes partake of the character of the next lowest sub-kingdom, the articulata. Afterwards come land animals, of which the first are reptiles, universally allowed to be the type next in advance from fishes, and to be connected with these by links of an insensible gradation. From reptiles we advance to birds, and thence to mammalia, which are commenced by marsupialia, acknowledgedly low forms in their class. That there is thus a progress of some kind, the most superficial glance at the geological history is sufficient to convince us. Indeed the doctrine of the gradation of animal forms has received a remarkable support from the discovery of this science, as several types formerly wanting to a completion of the series have been found in a fossil state.*
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> "It is scarcely less evident from the geological record, that the progress of organic life has observed some correspondence with the progress of physical conditions on the surface. We do not know for certain that the sea, at the time when it supported radiated, molluscous, and articulated families, was incapable of supporting fishes; but causes for such a limitation are far from inconceivable. The huge saurians appear to have been precisely adapted to the low muddy coasts and sea margins of the time when they flourished. Marsupials appear at the time when the surface was generally in that flat, imperfectly variegated state, in which we find Australia, the region where they now live in the greatest abundance, and one which has no higher native mammalian type. Finally, it was not till the land and sea had come into their present relations, and the former, in its principal continents, had acquired the irregularity of surface necessary for man, that man appeared. We have likewise seen reason for supposing that land animals could not have lived before the carbonigenous era, owing to the great charge of carbonic acid gas, presumed to have been contained in the atmosphere down to that time. The surplus of this having gone, as M. Brongniart suggests, to form the vegetation, whose ruins became coal, and the air being brought to its present state, land animals immediately appeared. So also sea plants were at first the only specimens of vegetation, because there appears to have been no place where other plants could be produced or supported. Land vegetation followed, at first simple, afterwards complex, probably in conformity with an advance of the conditions required by the higher class of plants. In short, we see everywhere throughout the geological history, strong traces of a parallel advance of the physical conditions and organic forms." (p. 150.)

Admitting, as we are ready to do, that the *general aspect* of the history bears out the inferences which our author (here following many previous speculators) founds upon it, we must stop to observe, that he has not exhibited his usual accuracy in regard to details. When these are closely examined, they are *not* found to support the hypothesis of progressive development,—i.e. of a regular sequence of forms, ascending in the scale of organization from the lower to the higher, in proportion to the advancing age of the earth. For, to advert to only a few cases,—in the older paleozoic, or protozoic rocks, we find, not merely zoophytes, but, in association with them, mollusca and crustacea; and both the mollusca and crustacea were far from being the lowest of their kind. For of the remains of mollusca, those of cephalopods, the very highest of the group, form a proportion much greater than that, which the existing species of that class bear to the inferior molluscs. And although the exact zoological place of the trilobites, which are so abundant in the paleozoic rocks, cannot be determined, there can be no doubt whatever that they were by no means the lowest of the crustaceous series. Again, although it is quite true that the earliest fishes, whose remains we find, present many points of approximation to the invertebrata, yet the *next*, those belonging to the *sauroid* family, must be considered as bearing an equally close affinity to the class of reptiles. Our author has been misled by the cartilaginous condition of the skeleton which prevails in that group, to speak of them as an order of "mean organization," (p. 63;) but this is by no means the case, since the existing sauroid fishes are superior in almost every particular, except the imperfect ossification of the skeletons, to all others of the class,—being especially remarkable for the development of their nervous and muscular systems, and for the advance in the mode of their reproduction towards the true viviparous type. We might adduce many other facts to the same effect; which seem to us to militate strongly against the deduction of any general law of progressive development from geological phenomena. Whilst objecting, however, to the *form* of our author's hypothesis of the origin of organized beings, we do in effect assent to his fundamental ideas; which we shall hereafter endeavour to present under a more satisfactory aspect. These ideas are so well expressed in the following quotations, that we shall not attempt to add or to qualify them.

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* Intervals in the series were numerous in the department of the pachydermata; many of these gaps are now filled up from the extinct genera found in the tertiary formation.

"There are, indeed, abundant appearances, as if, throughout all the changes of the surface, the various kinds of organic life invariably *pressed in*, immediately on the specially suitable conditions arising; so that no place which could support any form of organic being, might be left for any length of time unoccupied. Nor is it less remarkable how various species are withdrawn from the earth, when the proper conditions for their particular existence are changed. The trilobite, of which fifty species existed during the earlier formations, was extirpated before the secondary had commenced, and appeared no more. The ammonite does not appear above the chalk. The species and even genera of all the early radiata and molluscs were exchanged for others long ago. Not one species of any creature which flourished before the tertiary (Ehrenberg's infusoria excepted), now exists; and of the mammalia, which arose during that series, many forms are altogether gone, while of others we have now only kindred species. Thus, to find not only frequent additions to the previously-existing forms, but frequent withdrawal of forms which had apparently become inappropriate—a constant shifting as well as advance—is a fact calculated very forcibly to arrest attention.

"A candid consideration of all these circumstances can scarcely fail to introduce into our minds a somewhat different idea of organic creation from what has hitherto been generally entertained. That God created animated beings, as well as the terraqueous theatre of their being, is a fact so powerfully evidenced and so universally received, that I at once take it for granted. But in the particulars of this so highly supported idea we surely here see cause for some reconsideration. It may now be inquired, In what way was the creation of animated beings effected? The ordinary notion may, I think, be not unjustly described as this—that the Almighty Author produced the progenitors of all the existing species by some sort of personal or immediate exertion. But how does this notion comport with what we have seen of the gradual advance of species, from the humblest to the highest? How can we suppose an immediate exertion of this creative power at one time to produce zoophytes, another time to add a few marine molluscs, another to bring in one or two conchifera, again to produce crustaceous fishes, again perfect fishes, and so on to the end? This would surely be to take a very mean view of the creative power; to, in short, anthropomorphize it, or reduce it to some such character as that borne by the ordinary proceedings of mankind. And yet this would be unavoidable; for that the organic creation was thus progressive through a long space of time, rests on evidence which nothing can overturn or gainsay. Some other idea must then be come to with regard to *the mode* in which the Divine Author proceeded in the organic creation. Let us seek in the history of the earth's creation for a new suggestion on this point. We have seen powerful evidence that the construction of this globe and its associates, and, inferentially, that of all the other globes of space, was the result, not of any immediate or personal exertion of the Deity, but of natural laws which are expressions of His will. What is to hinder our supposing that the organic creation is also a result of natural laws which are, in like manner, an expression of His will? More than this, the fact of the cosmical arrangements being an effect of natural law, is a powerful argument for the organic arrangements being so likewise; for how can we suppose that the august Being who brought all these countless worlds into form by the simple establishment of a natural principle, flowing from his mind, was to interfere personally and specially on every occasion when a new shell-fish or reptile was to be ushered into existence on *one* of these worlds? Surely this idea is too ridiculous to be for a moment entertained." (pp. 151-4.)

The complete accordance of these views, with those some time ago propounded by ourselves (vol. V, p. 342), must be evident, we think, to our readers. To the objection which some timid religionists may urge against them, that they are inconsistent with the Mosaic record, we simply reply, with our author, that we do not think it right to adduce that record either in support of, or in objection to, any scientific hypothesis, based upon the phenomena of nature; and this for many reasons, but particularly for this, that there is not the least appearance of an intention in that book, or in any other part of scripture, to give philosophically exact views of the divine operations in the universe at large, or to do anything else than exhibit the Deity in his relations to man. The views just expressed are certainly not *more* inconsistent with the Mosaic account of the *manner* of creation, than are the more detailed conclusions of geologists in regard to its *history*;—perhaps not so much so.

The following passage accords so remarkably with our own views, as stated in a former page of this article, that it might appear a needless repetition to quote it; but the ideas which it presents are so felicitously expressed, that we cannot forbear introducing it.

"To a reasonable mind the Divine attributes must appear, not diminished or reduced in any way by supposing a creation by law, but infinitely exalted. It is the narrowest of all views of the Deity, and characteristic of a humble class of intellects, to suppose him acting constantly in particular ways for particular occasions. It, for one thing, greatly detracts from his foresight, the most undeniable of all the attributes of Omnipotence. It lowers him towards the level of our own humble intellects. Much more worthy of him it surely is, to suppose that all things have been commissioned by him from the first, though neither is he absent from a particle of the current of natural affairs, in one sense, seeing that the whole system is continually supported by his providence. Even in human affairs, if I may be allowed to adopt a familiar illustration, there is a constant progress from specific action for particular occasions, to arrangements which, once established, shall continue to answer for a great multitude of occasions. Such plans the enlightened readily form for themselves, and conceive as being adopted by all who have to attend to a multitude of affairs, while the ignorant suppose every act of the greatest public functionary to be the result of some special consideration and care on his part alone. Are we to suppose the Deity adopting plans which harmonize only with the modes of procedure of the less enlightened of our race? Those who would object to the hypothesis of the creation by the intervention of law, do not perhaps consider how powerful an argument in favour of the existence of God is lost by rejecting this doctrine. When all is seen to be the result of law, the idea of an Almighty Author becomes irresistible, for the creation of a law for an endless series of phenomena—an act of intelligence above all else that we can conceive—could have no other imaginable source, and tells, moreover, as powerfully for a sustaining as for an originating power." (p. 158.)

The author then passes from general to *particular considerations respecting the origin of the animated tribes;* and thus introduces the subject: "The general likelihood of an organic creation by law having been shown, we are next to inquire if science has any facts tending to bring the assumption more nearly home to nature. Such facts there certainly are; but it cannot be surprising that they are comparatively few and scattered, when we consider that the inquiry is into one of nature's profoundest mysteries, and one which has hitherto engaged no direct attention in almost any quarter." (p. 165.) It is the object of this chapter to bring together the known facts upon this subject; and we are sorry to be obliged to remark, that there is such a looseness in the author's statements, and so much disposition to interpret phenomena in accordance with his hypothesis, that we regret its presence in the book. It is in his reasoning upon the general question, that we recognize the mind of the true philosopher. The sublime inductions of astronomy, and the revelations of geological history, have never, perhaps, been so well interpreted with reference to the attributes of the Creator. But when the author comes to analyse the difficult problems of physiology, we see the workings of a mind better fitted (like that of the immortal Bacon) to deal with the *general* than the *particular*,—with *reasoning*, than with *facts*. The following is a specimen of the fallacies, which we feel called upon to notice with regret. After adverting to the discoveries of modern science in regard to the production and multiplication of *cells*, and rightly asserting that "all animated nature may be based on this mode of origin," he thus proceeds:—"*The fundamental form of organic being is a globule, having a new globule forming within itself*, by which it is in time discharged, and which is again followed by another and another in endless succession." Now, on a wrong application of a single term, a whole fabric of error may be erected; and we stop, therefore, to point out the author's confusion between a living *cell*, in itself an organized active being, capable of absorbing, respiring, secreting, and reproducing its kind,—and a mere *globule*, characterized only by its form, and having no vital actions whatever, (for the reproduction of *globules* is a fallacy).

"It is of course obvious," continues our author, "that if these globules could be produced, by any process, from inorganic elements, we should be entitled to say, that the fact of a transit from the inorganic into the organic had been witnessed in that instance; the possibility of the commencement of animated creation by the ordinary laws of nature, might be considered as established. Now, it was given out some years ago by a French physiologist [Dutrochet], *that globules could be produced in albumen by electricity.* If, therefore, these globules be identical with the cells which are now held to be reproductive, it might be said that the production of albumen by artificial means is the only step in the process wanting. This has not yet been effected; but it is known to be only a chemical process, the mode of which may be any day discovered in the laboratory; and two compounds, perfectly coordinate, urea and allantoin, have actually been produced." (p. 173.)

So that, in our author's opinion, we have only to manufacture albumen, to be able to produce "reproductive globules," out of inorganic matter, to an unlimited extent. The world is not, however, quite prepared for this announcement. The *globules* produced in albumen by the agency of electricity are far from being *living cells;* and no albumenous matter can exhibit vital actions,—so far as our present experience enables us to determine,—without having been subjected to the action of a previously-existing organism. Hence, even supposing that we could *manufacture* albumen (an idea we have long entertained as possible), we should be very little nearer to the manufacture of a reproductive cell, which no one has ever yet generated out of albumen ready prepared to his hand. We must imagine the author to be practically unacquainted with the matter in question; or he would not have fallen into the grievous error of confusing a cell with a globule.—So, also, in regard to the artificial production of a substance resembling shell, we apprehend that the results of recent microscopical inquiries are completely opposed to the idea of any real conformity between the two substances; the corespondence between their optical phenomena being no greater, than that which can be produced by impressing a series of lines, of sufficient delicacy and proximity to give the iridescent lustre, on *any* hard and polished surface. The author, however, does not lay much stress on these incidents; and thus proceeds to inquire into what actual experience says regarding the origin of life.

"Are there, it will be said, any authentic instances of either plants or animals, of however humble and simple a kind, having come into existence otherwise than in the ordinary way of generation, since the time of which geology forms the record? I may be answered, that the negative of this question could not be by any means formidable to the doctrine of law-creation, seeing that the conditions necessary for the operation of the supposed life-creating laws may not have existed within record to any great extent. On the other hand, as we still see the physical laws of early times still acting with more or less force, it might not be unreasonable to expect that we should still see some remnants or partial and occasional workings of the life-creating energy amidst a system of things generally stable and at rest. Are there, then, any such remnants to be traced in our own day, or during man's existence upon earth. If there be, it clearly would form strong evidence in favour of the doctrine, as what now takes place upon a confined scale, and in a comparatively casual manner may have formerly taken place on a great scale, and as the proper and eternity-destined means of supplying a vacant globe with suitable tenants. It will at the same time be observed, that the earth being now supplied with both kinds of tenants in great abundance, we only could expect to find the life-originating power at work, in some very special and extraordinary circumstances, and probably only in the inferior and obscurer departments of the vegetable and animal kingdoms." (pp. 175-6.)

This we consider to be very fair argument; and we cannot but regret to find that the author has not brought any additional evidence to bear upon the question. He quotes the opinions of various writers in regard to the production of infusoria, entozoa, &c.; and points out certain obvious fallacies in the reasoning, by which the idea of their uniform origin *ab ovo* is usually supported. Thus it has been shown that, when a vegetable infusion is debarred from the contact of the atmosphere, by being closely sealed up or covered with a layer of oil, no animalcules are produced; but it may be said, on the other hand, that the exclusion of the air may prevent some simple condition necessary for the aboriginal development of life. Let the experiment be tried in a different manner,—for instance, by admitting air that had been passed through a tube sufficiently hot to destroy any organic germs it might contain; and the appearance of animalcules in the infusion, under such circumstances, would doubtless be a much stronger argument in favour of their spontaneous production. But it would be far from an unanswerable one; since it might fairly be objected, that ova were not destroyed by the heat, or that the tissues of the plant had contained the parent animalcules. This last objection must be admitted to have great weight, when it is remembered that the residence of animalcules in living plants is by no means uncommon; as has been shown in regard to certain Rotifera, which inhabit the perforated cells of the sphagnum, and the Vibriones which are so well known to frequent the grains of wheat. It must be admitted, we think, that *our general experience* is in favour of reproduction by *germs of some kind*, (to what extent *similar* germs may produce *different* forms, according to the circumstances of their development, we shall presently inquire;) and therefore we feel a right to explain away phenomena which apparently require a different interpretation, in any mode not free from insuperable objections; in other words, we cannot admit the truth of the doctrine of spontaneous generation, until a living being has been produced under circumstances which render the pre-existence of a germ *impossible.*

Such a case our author thinks is presented by the production of the celebrated *Acarus Crossii*, which was first noticed in a solution of silicate of potass, when submitted to slow galvanic action, for the purpose of obtaining crystals of silex. We have Mr. Crosse's own authority for the statement, that he never made any experiments for the purpose of producing those creatures; but that they presented themselves in the course of experiments devised for entirely different purposes. By Mr. Weekes of Sandwich, however, the experiments were repeated and varied with this express object, and with similar results; a larger number of acari being generated, when ferrocyanate of potass was the compound employed,—which is imputed by our author to the carbon which it includes. We are sorry to notice another error of detail in the account given by the author of these experiments. Quoting Mr. Weekes's statement that, when the silicate of potass was galvanized, it first became turbid, and then of a milky appearance, and that round the negative wire of the battery, there gathered a quantity of *gelatinous matter*, he jumps to the conclusion that this consists of the organic compound, or proximate principle, *gelatin*, of which there is not the shadow of a proof. Let it be remembered that the silicate of potass, or liquor of flints, has itself a very *gelatinous appearance;* but we might as well set down its subsequent *milky aspect* to the production of milk, as conclude, without further proof, that the gelatinous aspect is due to the presence of gelatin. Putting aside, however, all that is questionable, and confining ourselves to ascertained facts, we believe that we are justified in stating, that none of the easy solutions, which have been offered of the difficult problem presented by the appearance of this acarus can be admitted. In Mr. Weekes's experiments, every precaution *seems* to have been taken to avoid fallacy. The solid materials employed were submitted to a heat sufficient to calcine them; the fluids were distilled; and the galvanic action was conducted within a vessel, from the interior of which the air was completely excluded, and under oxygen which had been disengaged from manganese at red heat. It is not a little remarkable, that *the same species* of animal, and no other, should present itself under these circumstances, as in Mr. Crosse's experiments. Not the least curious part of its history, is the series of metamorphoses which it undergoes before quitting the solution; these being entirely different from the very slight changes which other acari undergo after their emersion from the egg. Further, we believe it may be positively asserted, that, in whatever mode these acari are first generated, *it is not from eggs;* since, after they have escaped from the solution, they live in the neighbourhood, and readily breed; and their eggs, which we have ourselves seen, are quite large enough to have been readily visible in the solution, had they existed there. Not entertaining the opinion, which a certain clergyman is reported to have expressed of Mr. Weekes's investigations,—that "it was a very dark business, and such as no christian man ought to engage in,"—we please ourselves with the hope of being able to throw some light, ere long, upon the history of this interesting creature, by the careful study of the physiological peculiarities of its development; leaving it to those eminent in physical science to investigate the physical conditious under which it is produced. Should the author's views be realized, the *acarus Crossii* will indeed be worthy to take rank aso ne of the most—if not *the* most—physiologically-important species of the whole animal creation; affording proof of the *possible* origin of living beings of complex structure and varied actions, from the combination of particles of inorganic matter under peculiar conditions; and thus outshining, in the eyes of the physiologist, the transcendant merits of frogs, rabbits, dogs, asses, &c. as subjects of experiment. But before we can yield our belief to so wonderful an event, we must be much more assured than we are, that the production of the animal, in both Crosse's and Weekes's experiments, was *impossible* in the ordinary way of generation.

Let us now see how our author meets the objection, which will be most certainly raised against his inferences from these experiments:—as, indeed, it has already been, in regard to the interpretation supposed (but erroneously) to have been offered by Mr. Crosse himself.* It has been held to be impious, even to surmise that animals could have been formed through any instrumentality of an apparatus devised by human skill. To this it may be replied:

> "The supposition of impiety arises from an entire misconception of what is implied by an aboriginal creation of insects. The experimentalist could never be considered as the author of the existence of these creatures, except by the most unreasoning ignorance. The utmost that can be claimed for, or imputed to him is, that he arranged the natural conditions under which the true creative energy,

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* Mr. Crosse has uniformly declined expressing an opinion upon the subject; wisely restricting himself to a statement of the facts witnessed by himself.

that of the Divine Author of all things, was pleased to work in that instance. On the hypothesis here brought forward, the *Acarus Crossii* was a type of being ordained from the beginning, and destined to be realized under certain physical conditions. When a human hand brought these conditions into the proper arrangement, it did an act akin to hundreds of familiar ones which we execute every day, and which are followed by natural results; but it did nothing more. The production of the insect, if it did take place as assumed, was as clearly an act of the Almighty himself, as if he had fashioned it with his hands." (pp. 188-9.)

Let us now briefly recapitulate the ground over which we have passed. We have endeavoured, with our author's aid to show in the *first* place, that all our knowledge of the attributes of the Deity, derived both from the philosophic study of his operations in the physical universe, and from revelation itself, leads to the belief in the uniformity of his plan of action, from the beginning of the existing system of things to the present day; or in other words, that the laws he at first laid down for himself, have not been modified by any subsequent contingencies.

*Secondly*, we have seen that both astronomy and geology combine in representing our globe, as having passed through a series of phases; commencing perhaps with the gradual condensation of a diffused nebular matter, but at any rate with the gradual cooling of a liquid mass in a state of incandescence *

*Thirdly*, that organic life could not have appeared, until after a *crust* had been formed on the surface of the globe, and this crust had been covered with water; all which must have occupied a vast period of time.

*Fourthly*, that subsequently to the first appearance of organic life upon the globe, its forms have been continually undergoing change;—some becoming extinct, owing to a change of the conditions required for their existence;—whilst others have been introduced, in conformity with the new circumstances which have arisen from time to time.

*Fifthly*, that to reconcile these successive changes in the organic forms existing on the earth, with that idea of unvarying law, which we regard as essential to our conception of the Deity, we must believe all these forms as having been previously arranged or determined by Him, in accordance with the conditions which would successively arise; and to have come into existence, as soon as these conditions presented themselves, without any *fresh* act of creative power, or any special interference. This view, we may remark, derives remarkable confirmation from the fact of which the philosophic naturalist is now well aware, that his classification can only be complete, when it embraces *all* the fossil as well as the existing forms of plants and animals; the hiatuses existing among the latter, which are most perplexing to the systematist, and which prevent him from obtaining even a glimpse of the *plan* on which the organized creation has been arranged, being filled up, often in the most remarkable and unexpected manner, by the former.

*Sixthly*, that, with reference to the creative *nisus* of the Deity, which (as it has been seen) we most fully recognize in *all* cases, it cannot be regarded as essentially different, whether He constructed the new forms of organized beings out of the materials supplied by the inorganic world,

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* This last view is supported by the fact of the *spheroidal* form of the earth, and by the still more spheroidal form of Jupiter; the excess of the equatorial over the polar diameter being, in each case, exactly what would result from centrifugal force acting on *liquid masses* rotating at the present diurnal rates of these two planets respectively.

*at each period* that such an interposition was rendered necessary by a change of condition: or whether He *originally* endowed the particles of what we commonly term inorganic matter with the power of *themselves combining* into these new forms, whenever the requisite conditions should arise. As in the case of the calculating machine, however, it gives a much higher notion of the character of the designing mind, to regard these operations as the working out of the original plan, than to attribute them to special and repeated interpositions.

*Seventhly*, that our limited experience must not be taken as affording a sufficient demonstration of the falsity of this position, even though we should not be able to produce a single case in which a new form of organic life has been thus developed under our own observation; and that it is, to say the least, an undecided question, whether this has not actually taken place.

It may serve to add probability to these views, if we turn our attention to that which must necessarily be admitted, on *any* hypothesis, of all those forms of matter which are employed in the construction of a living being. We see a simple germ—the nucleus of a cell—develope itself into a feeling, moving, thinking Man, by drawing into itself and combining into new forms the particles of what we are accustomed to call Inorganic matter. These new forms are caused, by the very act of combination, to manifest properties of a new and peculiar kind; and their actions constitute the life of the being. Hence we must attribute to all those substances, which are thus drawn from the inorganic into the organic mode of existence, *a latent capacity* for the latter;—just as we say that the oxygen, hydrogen, carbon, and nitrogen, which make up the organic substance termed muscular fibre, and which in *that* state or mode of combination possess certain *vital* properties, possess also *a latent capacity* for combining in that mode of aggregation termed crystalline, and for exhibiting the solubility, translucency, and other qualities of a salt (all of which are totally opposed to its vital properties, and cannot co-exist with them), when united into the form of cyanate of ammonia. If we were *only* acquainted with these elements as they exist in organic compounds, their transposition into a crystalline salt would be almost as marvellous to us as the opposite change is now. If this *latent organizability or vitality* be admitted (as we conceive logical proof to have been given that it must), as a property of a large proportion of what we call inorganic matter, is there any such wonderful difficulty in imagining that it may be brought into play in some other manner than by the agency of a pre-existing germ? We think not. But let further investigation and more extended experience decide.

Thus far we have kept in perfect agreement with our author, on all main questions; though we are not quite so ready as himself to admit, as *proved*, what is certainly very far from being demonstrated. And though we have expressed ourselves somewhat strongly in favour of what may be termed the *à priori* argument, drawn from the attributes of the Deity, as made known to us by his works and by his Word, yet we would endeavour to guard ourselves and others from the presumption of supposing that, in the absence of any positive data on the subject, any such argument can be sufficient to decide the question—presuming, as it does, that the *whole* Mind of the Deity, on this subject, is known to *us*, his feeble imperfect creatures. Our aim has rather been, to set before our readers that which we think *may be* believed, than to dictate to them what *is to be* believed,—to remove the errors and prejudices connected with hitherto-received modes of thought—rather than to establish any new system.

In the remaining part of our author's scheme, however, we cannot so fully accord with him. This is contained in a chapter entitled "Hypothesis of the Development of the Vegetable and Animal Kingdoms;" and it will be understood from the following extracts. After directing attention to the fact, that, notwithstanding the almost countless varieties of form and structure presented by organized beings, there are fundamental resemblances, which enable us to group them round particular types;—and, after noticing some of the modifications which the same organs undergo in different species, for the purpose of adapting them to different conditions of existence, he thus continues:

> "In such circumstances, a candid mind which sees nothing impious or unphilosophical in the idea of a new creation, will be disposed to think, that there is less difficulty in believing in such a creation having actually taken place, than in believing that in two instances, separated in place and time, exactly the same insects should have chanced to arise from concealed ova, and these heretofore unknown." (p. 190.)
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> "These facts clearly show how all the various organic forms of our world are bound up in one,—how a fundamental unity pervades and embraces them all, collecting them, from the humblest lichen up to the highest mammifer, in one system, the whole creation of which must have depended upon one law or decree of the Almighty, though it did not all come forth at one time. After what we have seen, the idea of a separate exertion for each must appear totally inadmissible. The single fact of abortive or rudimentary organs condemns it, for these, on such a supposition, could be regarded in no other light than as blemishes or blunders, the thing of all others most irreconcilable with that idea of Almighty Perfection, which a general view of nature so irresistibly conveys. On the other hand, when the organic creation is admitted to have been effected by a general law, we see nothing in these abortive parts but harmless peculiarities of development, and interesting evidences of the manner in which the Divine Author has been pleased to work." (p. 197.)

He then dwells much on the modern physiological doctrine of progressive development, as occurring in every one of the higher animals; and adverts to some curious analogies between the fœtal conditions of existing animals, and the earliest forms of similar animals whose traces can be detected. These analogies, however, do not by any means appear to us sufficient to demonstrate, although they may render probable, "the parity, or rather identity, of laws presiding over the development of the animated tribes on the face of the earth, and that of the individual in embryo." On this principle, his hypothesis of the progressive changes in the fauna and flora of our own and other globes, is erected—after the following fashion:

> "The tendency of all these illustrations is to make us look to *development* as the principle which has been immediately concerned in the peopling of this globe, a process extending over a vast space of time, but which is nevertheless connected in character with the briefer process by which an individual being is evoked from a simple germ. What mystery is there here, and how shall I proceed to enunciate the conception which I have ventured to form of what may prove to be its proper solution! It is an idea by no means calculated to impress by its greatness, or to

puzzle by its profoundness. It is an idea more marked by simplicity, than perhaps any other of those which have explained the great secrets of nature. But in this lies perhaps one of its strongest claims to the faith of mankind.

The whole train of animated beings, from the simplest and oldest up to the highest and most recent, are, then, to be regarded as a series of *advances of the principle of development*, which have depended upon external physical circumstances to which the resulting animals are appropriate. I contemplate the whole phenomena as having been in the first place arranged in the counsels of Divine Wisdom, to take place, not only upon this sphere, but upon all the others in space, under necessary modifications, and as being carried on from first to last, here and elsewhere, under immediate favour of the creative will or energy. The nucleated vesicle, the fundamental form of all organization we must regard as the meeting-point between the inorganic and the organic, the end of the mineral and beginning of the vegetable and animal kingdoms, which thence start in different directions, but in perfect parallelism and analogy." (p. 202-4.)

In regard to this analogy he elsewhere remarks (p. 237), that "so complete does it appear, even in the present imperfect state of science, that I fully expect in a few years to see the animal and vegetable kingdoms duly ranked up against each other in a system of parallels, which will admit of our assigning to each species in the former the particular shrub or tree corresponding to it in the latter, all marked by unmistakeable analogies of the most interesting kind." Disposed as we are to seek for and recognize these analogies (see vol. I, p. 1, *et seq.*), we cannot feel nearly so sanguine as our author, in regard to the extent to which they are likely to be pushed; since it is only in a most general and comprehensive view of the principal groups of the two kingdoms respectively, that any analogy can be detected between them; and the entire difference in the *fundamental plan* of the two grand divisions of organized beings, and, consequently, in all the details of their structure and economy, entirely forbid the idea, in our apprehension, that any such individual resemblance can exist. But we return from this digression to our author's hypothesis, which will perhaps be best understood by an extract from a later part of the chapter:

"The idea then which I form of the progress of organic life upon the globe, and the hypothesis is applicable to all similar theatres of vital being, is *that the simplest and most primitive type, under a law to which that of like production is subordinate, gave birth to the type next above it, that this again produced the next higher, and so on to the very highest*, the stages of advance being in all cases very small, viz. from one species only to another; so that the phenomenon has always been of a simple and modest character. Whether the whole of any species was at once translated forward, or only a few parents were employed to give birth to the new type, must remain undetermined; but supposing that the former was the case, we must presume that the moves along the line or lines were simultaneous, so that the space vacated by one species was immediately taken by the next in succession, and so on back to the first, for the supply of which the formation of a new germinal vesicle out of inorganic matter was alone necessary. Thus the production of new forms, as shown in the pages of the geological record, has never been anything more than a new stage of progress in gestation, an event as simply natural, and attended as little by any circumstance of a wonderful or startling kind, as the silent advance of an ordinary mother from one week to another of her pregnancy. Yet, be it remembered, the whole phenomena are, in another point of view, wonders of the highest kind, for on each of them we have to trace the effect of an Almighty will which had arranged the whole in such harmony with external physical circumstances, that both were developed in parallel steps, and probably this development upon our planet is but a sample of what has taken place, through the same cause, in all the other countless theatres of being which are suspended in space." (pp. 222-3.)

We shall leave him to explain, also, the difference between *his* hypothesis and that of Lamarck; which has been most deservedly ridiculed by almost every writer who has alluded to it:

> "Early in this century, M. Lamarck, a naturalist of the highest character, suggested an hypothesis which deservedly incurred much ridicule, although it contained a glimmer of the truth. He surmised and endeavoured, with a great deal of ingenuity, to prove that one being advanced in course of generations to another, in consequence merely of its experience of wants calling for the exercise of its faculties in a particular direction, by which exercise new developments of organs took place, ending in variations sufficient to constitute a new species. Thus, he thought that a bird would be driven by necessity to seek its food in the water, and that, in its efforts to swim, the outstretching of its claws would lead to the expansion of the intermediate membranes, and it would thus become web-footed. Now, it is possible that wants and exercise of faculties have entered in some manner into the production of the phenomena which we have been considering; but certainly not in the way suggested by Lamarck, whose whole notion is obviously so inadequate to account for the rise of the organic kingdoms, that we only can place it with pity among the follies of the wise. Had the laws of organic development been known in his time, his theory might have been of a more imposing kind. It is upon these that the present hypothesis is mainly founded. I take existing natural means and show them to have been capable of producing all the existing organisms, with the simple and easily-conceivable aid of a higher generative law, which we perhaps still see operating upon a limited scale. I also go beyond the French philosopher to a very important point, the original Divine conception of all the forms of being which these natural laws were only instruments in working out and realizing." (pp. 230-1.)

It is admitted that there is no satisfactory proof of the development, under our observation, of any new race of animals, differing from its progenitors in a mode sufficiently marked to constitute that which a naturalist would regard a distinct *species*. On this word *species* we must for a moment dwell, in order to explain the sense in which we use it. Two races of animals are said to be of *the same species*, if they are not distinguished from each other by any peculiarities, but such as the one may be supposed to have lost, or the other to have gained, with the lapse of time or variations in external circumstances. When this is the case, it is presumed that these two races had, or may have had, *common progenitors*. On the other hand, when a *constant* difference exists between two races, such as we cannot account for in the ways just mentioned, we believe that they must have been *originally distinct*, or have been of *different species*. It is well known that there are some races, as those of the dog, amongst which the differences are very considerable; yet there is reason to regard them all as descendants of one stock, and many zoologists believe that stock to have been the wolf. Still, amongst all these, there is an exact agreement in those characters which are elsewhere found best to serve the purposes of classification; viz. those derived from the form of the teeth and extremities: and there is a tendency among them all to return to a common type, when the races are no longer kept distinct by the intervention of man. But among the feline races, the case is very different; for the several species of that genus—agreeing so closely in osteology that, except in point of size, there is no characteristic distinction between their respective skeletons—are found to be sufficiently distinguished from each other by the markings upon their skins—characters which are in *other* cases subject to extreme uncertainty, but which are *here* so constant as to present scarcely the slightest variation amongst different individuals. Thus, if a certain patch or stripe be repeated from generation to generation with *certainty*, in a feline race, the naturalist regards this a sufficient proof of the specific difference of that race from another that is differently marked. The domestic cat is the only one of the group that is liable to any considerable variation; and in *this* species, as every one knows, the markings characteristic of the several breeds or races are *not* constant, and are therefore not indicative of original difference. This striking contrast between *variable* and *invariable* groups of animals nearly allied to each other, is found through the whole kingdom; every division of it containing *some* species, which do *not* change their forms or other characteristics under *any* circumstances, but which cease to exist if a change in their conditions renders these unsuitable; whilst it also includes others in whose physical and psychical constitutions there is such a susceptibility of undergoing modification, that new forms and new instincts may arise, and thus new and very different races may be originated.

Now, it is evident that the *known invariability* of a large proportion of the species composing the animal kingdom, is a powerful objection to the hypothesis in question; still it must be admitted to be not an unanswerable argument, since it may be said that we have not had them sufficiently long under our observation, nor seen them placed in a sufficient variety of circumstances, to enable us to assert their unalterability so dogmatically. Still, it is evidently for those who deny what all experience teaches, to adduce some proof of their position; and here we think that our author fails. The *known variability* of certain other species does not much help his doctrine; for though there are many breeds of dogs and horses, sheep and oxen, they are *all* dogs and horses, sheep and oxen; differing in subordinate peculiarities, but in no instance becoming elevated towards any higher form, or acquiring any entirely new faculty. It has been, we think, completely demonstrated, that, in all known instances in which any *acquired* peculiarity is transmitted from parents to offspring, it has reference to the *original* habits of the race. Thus, particular breeds of dogs are distinguished by peculiarities of instinct, as well as of conformation; but all these peculiarities have reference to their natural habits, and may be regarded as resulting from a higher development of some particular pre-existing tendencies, others remaining in consequence almost rudimentary. We might, doubtless, produce the same results by training particular races of men; indeed, we may even now witness them, by comparing any two races, which, having long existed under opposite conditions, have had a certain physical and mental constitution impressed upon them in consequence, but are still *men*.

We do not regard our author as at all more fortunate in the illustrations he has attempted to draw from the study of development. For neither in the case of the butterfly which comes forth in the condition of a worm, the frog which begins its *extra-oval* life in the condition of a fish, or the queen-bee which is produced by the increased development of a neuter, do we recognize any indication whatever of an advance upon the type of the species. Of the two former cases the history is simply this,—that, for certain purposes, which it is not difficult to trace, the embryo comes forth, at an unusually early period, in possession of a set of organs which enable it to obtain food for itself; and thus to support *itself* during the remaining period of its development, instead of being dependent upon the nutriment supplied by the parent. The larva of an insect (we speak of those undergoing a *complete* metamorphosis) is still as much an embryo, in regard to the condition of its tissues, as if it were being developed, like that of a spider or acarus, within its egg; and in its pupa state—a period of *organic development* and of *dormant animality*—we recognize a return to the passive condition of the embryo of other animals, preparatory to the final emersion of the imago in the fully-developed condition. The recent direction of zoological research towards the natural history of the lower tribes of animals, has abundantly shown that the phenomenon of metamorphosis, which is rather the *exception* in the higher classes, is the *rule* in the lower; and that it is, in all cases of the same character; viz. a temporary assumption by the *embryo*, of a condition analogous to that of some of the *lower* tribes, enabling it to obtain its own food, and consequently to acquire the materials for its further development without the assistance of its parent. Such facts, it will be obvious, afford no support whatever to the idea, that a true worm can ever become a butterfly, or a true fish become a frog.—The case of the queen-bee is somewhat different, though still analogous. It was ascertained by Huber that the larva of the working-bee may be developed, by a particular mode of treatment, into a queen; but this simply results from the evolution of the sexual organs, which, on the ordinary regimen of the workers, remain atrophied. Hence every worker may be considered as an undeveloped queen, in regard to the sexual apparatus and its connected instincts, these characteristics of the latter being rudimentary in the former; but, on the other hand, every queen may be regarded as an undeveloped worker, in regard to certain other organs (the instruments of its destined labours), and the instincts connected with them, which are developed in the latter but not in the former. In other words, all that this fact proves is, that the same germ may be developed into two *different* forms, according to the circumstances of its early growth; it by no means demonstrates any capability of advance in the race at large. If the queen-bee, thus produced from a worker-larva, were to produce only a royal race, equally gifted with herself, we might admit the validity of the argument; but, instead of this being the case, she becomes, like her sister sovereigns, the parent of as rank a democracy as ever flourished; and the new and improved edition is as far as ever from blessing our sight. Moreover, it is by no means proved, that the queen is more elevated in type than the workers; for it is a mere assumption that she *directs* the labours of the hive. *Her* province is simply to increase the population; whilst the offices of the workers are far more varied, and their psychical character appears to be higher.—The study of the physiology of plants, and of that of the lower tribes of animals, affords numerous instances of a similar character; where *like* germs are developed, under varying circumstances, into *unlike* beings; but in all these cases, there are certain limitations to the varieties of form which are produced, and we cannot say that either of them is a decided advance upon another.

We have dwelt upon this point the longer, because our author's arguments have a certain speciousness about them, which does not allow their true value to be estimated, until they have been carefully sifted. The progressive development of species on the surface of the globe, and the successive appearance of different kinds of animalcules in an infusion of decaying matter, are also referred to as confirmations of the doctrine which he advances; but we have already shown, that the detailed study of palæontology does not bear out the inferences suggested by a cursory view of it; and the hypothesis we are about to suggest will be found, we think, much more conformable to the facts supplied by geological history, as well as to the second of the cases just noticed. We must first quote, however, on account of the just and beautiful spirit which pervades it, a passage, in which our author combats the objections he anticipates to that account of the origin of the human race, which his theory involves:

> "But the idea that any of the lower animals have been concerned in any way with the origin of man—is not this degrading? Degrading is a term expressive of a notion of the human mind; and the human mind is liable to prejudices which prevent its notions from being invariably correct. Were we acquainted for the first time with the circumstances attending the production of an individual of our race, we might equally think them degrading, and be eager to deny them, and exclude them from the admitted truths of nature. Knowing this fact familiarly and beyond contradiction, a healthy and natural mind finds no difficulty in regarding it complacently. Creative Providence has been pleased to order that it must be so, and it must therefore be submitted to. Now, the idea as to the progress of organic creation, if we become satisfied of its truth, ought to be received precisely in this spirit. It has pleased Providence to arrange that one species should give birth to another, until the second highest gave birth to man, who is the very highest; be it so, it is our part to admire and to submit. The very faintest notion of there being anything ridiculous or degrading in the theory—how absurd does it appear when we remember that every individual amongst us actually passes through the characters of the insect, the fish, and reptile (to speak nothing of others), before he is permitted to breathe the breath of life. But such notions are mere emanations of false pride and ignorant prejudice. He who conceives them little reflects that they in reality involve the principle of a contempt for the works and ways of God. For it may be asked, if He, as appears, has chosen to employ inferior organisms as a generative medium for the production of higher ones, even including ourselves, what right have we, his humble creatures, to find fault? There is also in this prejudice an element of unkindliness towards the lower animals, which is utterly out of place. These creatures are all of them part products of the Almighty conception, as well as ourselves. All of them display wondrous evidence of his wisdom and benevolence. All of them have had assigned to them by their Great Father a part in the drama of the organic world, as well as ourselves. Why should they be held in such contempt? Let us regard them in a proper spirit, as parts of the grand plan, instead of contemplating them in the light of frivolous prejudices, and we shall be altogether at a loss to see how there could be any degradation in the idea of our race having been genealogically connected with them." (p. 233-5.)

We shall now briefly indicate the view which we would substitute for the author's, in regard to the development of the several varieties of animal and vegetable life, which have existed, or which now exist upon the globe. We would premise, however, that we by no means desire to advance it as a formal theory, or as one entitled to reception on any other grounds than those of an abstract *à priori* character, such as those which we have already indicated. *If* it be admitted as possible ("there is great virtue in an *if*,") that *any* combination of inorganic matter can, under *any* circumstances, produce a living being, we do not see why we should not look to such a combination as the real origin of *every* race, including man himself; each species thus being called into existence by the original ordination of the Creator, just when that coincidence of circumstances occurred which was favorable to its development and continuance. We see nothing more difficult in the supposition, that the *highest* animals had such an origin, than in attributing the same to the lowest; it is the origin of *a living cell* that constitutes the great stumbling-block; *ce n'est que le premier pas qui coute.* "Give me a vesicle," quoth Raspail, in the Archimedian style, "and I will make a thinking man." In this manner we account for the fact, that organic life seems to have *pressed in*, as our author has well phrased it, whenever the changing conditions of the surface of the globe rendered it capable of supporting new races, whilst they extinguished the old ones; without any twisting of the facts into a doctrine of progressive development. In this manner, too, we would account for the successive appearance of new species of infusoria, of a higher and higher type, in a vegetable infusion; the new ones making their appearance, as the character of the infusion became adapted to generate them, by new combinations of elements, rather than by the metamorphosis of forms which had been previously developed in accordance with a different state of things. And this view, moreover, seems to us much more consonant with the fact—*if* fact it be, that the being produced in Mr. Crosse's electric apparatus was not a monad, nor any other protozoic infusory, but an animal of complex organization, and capable of propagating its own kind. That the Creator formed man out of the dust of the earth, we have scriptural authority for believing; and we must confess our own predilection for the idea that, at a period however remotely antecedent, the Creator endowed certain forms of inorganic matter with the properties requisite to enable them to combine, at the fitting season, into the human organism,—over that which would lead us to regard the great-grandfather of our common progenitor as a chimpanzee or an oran-outang. We may here notice, by the way, another error of detail into which our author has fallen, in a later part of his work; where, after endeavouring to trace the origin of the human race to India, he remarks that, according to his theory of development, "we should expect man to have originated where the highest species of quadrumana are to be found;—these are unquestionably found in the Indian Archipelago." (p. 296.) Now, it has been clearly proved, by the elaborate comparison instituted by Proffessor Owen, that the oran-outang does not present nearly so striking an approach to the human race, as that which is exhibited by the chimpanzee, an inhabitant of *Western Africa;* and, further, that, in what are commonly regarded as the *lowest* varieties of the human race, the resemblance to the apes is in many points *less* than in the highest; as, for example, in the case of the development of the os calcis, which every one knows to be much greater in the Negro than in the European, whilst there is a complete absence of *heel* in the apes. So also, whilst the prominent muzzle of the Negro races must be regarded as a character of degradation, assimilating them to the lower tribes of animals, the large development of the cranium *behind* the foramen magnum, in the Negro, is anything but a point of affinity to the chimpanzee, oran-outang, or any other quadrumanous animal, since the foramen magnum is placed farther back, in the base of *their* crania, than it is in those of any of the human races.

Our limits forbid our dwelling any longer on these topics, though we are strongly attracted to do so by their highly interesting nature; and having devoted so much space to the discussion of our author's general views, we feel ourselves under the necessity of passing over, at least foı the present, the remainder of his work, in which the application of these views to the physical and moral condition of man is displayed. We cannot conclude, however, without remark that the introduction of a chapter on the Macleay, or Quinary, system of animated nature, strikes us as the greatest blemish in the book. Although doubtless containing some germs of truth, and possessing the merit of having directed the attention of naturalists to more philosophical views of arrangement than those which formerly prevailed, we consider ourselves warranted in asserting,—as well from no small amount of consideration on our own parts, as from what we know to be the opinion of some of the most eminent naturalists of our own and other countries,—that, as a *natural system*, it is a most egregious failure, and that nothing but a most procrustean application of it can bring all the divisions and subdivisions of the animal kingdom to the number *five*. It bears upon the face of it so many marks of being a system of *human* invention, that we cannot for a moment imagine it to be the plan, on which the Creator has worked in the production of the several combinations which are presented to us in the animal kingdom. That *such a plan does exist*, every philosophic naturalist believes; and that it will be ultimately discovered, or that a considerable approach to it will be made, we have every reason to hope. But its discovery will be most assuredly retarded by hasty generalization; and our present amount of knowledge of a great proportion of the species composing the animal kingdom is yet too small to enable us to speculate on the subject with any considerable degree of probability,—far less, to entitle us to assume the truth of *any* of the numerous systems which have been proposed, as a basis for further argument. It would have answered our author's purpose nearly, if not to the full, as well, if he had assumed that *there is a regular system* in animated nature; which we believe that no one who has given the least attention to the subject would be hardy enough to contradict.

## Art. XVII.

*De l'emploi de la Chaleur dans le Traitement des Ulcères, des Plaies après les Amputations et les grandes Opérations chirurgicales, de l'Hysterie, des Maladies de la Peau, du Rheumatisme, &c.* Par M. Le Dr. Jules Guyot.—*Paris*, 1842.

*On the Employment of Heat in the Treatment of Ulcers, Wounds after Amputation, and other great Surgical Operations, of Hysteria, Diseases of the Skin, &c.* By M. Le Dr. Jules Guyot.—*Paris*, 1842. 8vo, pp. 264.

This work is divided into four parts. The first consists of pure theory, with deductions from that theory, and from observations anterior to those of the author; the second treats generally of the effects of natural and artificial heat, and of the means of applying the latter; the third part contains the results of the author's experience in the remedial application of heat at a certain temperature; the fourth part consists of an analysis and discussion of the facts previously adduced, with some general precepts and inductions.

The theoretical part need not detain us long. According to M. Guyot, the efficient cause of organization is *heat*, which, being at first derived from extraneous sources, afterwards becomes the most immediate and necessary result of organization; there exists, therefore, in all living beings, a vital principle, which is neither more nor less than the degree of heat appropriate to each species. M. Guyot considers the following as three absolute laws, subject to no exception:

> "1. The proximate and determining cause of the formation of all beings organized for the purpose of living, is heat.
>
> "2. No being so organized can live, unless it either maintain internally the same degree of heat which has produced its organization, or receive that heat from some extraneous influence.
>
> "3. Affinity, organic contractility and sensibility are immediately dependent on the temperature proper to each living being, and the same is the case with the contractility and sensibility termed animal." (p. 36.)

We think our author would have done far better to have eschewed all theory, and gone at once into the practical part of his subject The truth is, even admitting that any benefit could arise from speculating on such a theme, M. Guyot is not precisely in a condition to do so with effect, being evidently by no means profound in organic chemistry—a most essential study to one who would enter such a field of inquiry, with the smallest prospect of success.

Waiving the question whether heat be or be not the vital principle, it is quite clear that temperature has immense influence on all the normal prosesses and developments of life, and it may hence be reasonably inferred that its influence is also very extensive on morbid and reparative progresses and developments. The latter consideration, though sufficiently obvious, has been much neglected, and the influence of temperature on the progresses of diseases, and the reparation of injuries has hitherto been but very partially investigated. The work of M. Guyot, however, though calculated to awaken attention generally to the remedial effects of temperature, regards the subject principally under a phase which is entirely new, and which may prove to be highly interesting and important. His main inquiry relates to the effects of *a particular temperature*, which is that established by nature as most favorable to the healthy processes of life, and which may thence be presumed to be favorable also to those efforts by which nature opposes morbid actions, and effects the reparation of parts injured by disease or violence. Our author deserves credit for having taken up this inquiry, as well as for the diligence with which he has pursued it; we have therefore much pleasure in presenting our readers with an abstract of his researches.

In the second part of his work M. Guyot treats of "natural and artificial incubation." Incubation he defines to be "the prolonged application of a certain heat adapted to favour the development of an organization capable of living." The natural internal heat of the human body, according to our author, is 36° cent. ($96\frac{4}{5}$° Fahr.)

> "When man has arrived at his full development, he contains within himself, and at every point of his organization, a sufficient temperature. It would be contrary to his organization and his health that incubation should be prolonged beyond the limits imposed by the laws of nature. The excitement which he receives from an extraneous temperature different from his own, is indispensable to the activity of his functions; but it is this very excitement which becomes baneful, when the functions are altered or suspended. Every temperature different from their natural heat stimulates and irritates the organs, to which it is applied. If the functions of these organs he deranged, they will become so much the more so, in that the organs will have to sustain a more active contest with external impressions; and the more the external temperature differs from the natural heat of the body, the more will the body suffer violence and exhaustion; it is indifferent whether it have to contend with an extreme of heat or of cold, the phenomenon of irritation is nearly the same in both cases." (p. 49.)

Previously to inquiry into the best means of sustaining around the body a temperature of 36° cent., M. Guyot considers the question whether the contact of air with the living tissues, its penetration into organs, or its action upon wounds be attended with any mischievous effects. In 1831, M. Guyot published a memoir in the 'Annales de la Médecine Physiologique,' containing the results of his experiments on animals relative to the above question. His inferences from these, and other more recent experiments are as follows: Air, when devoid of any noxious impregnation, has, simply considered, no injurious action on living parts. It may, nevertheless, become injurious in two ways: 1. Mechanically, as by causing the lung to collapse in penetrating wounds of the chest; by destroying the cellular attachments of the viscera in wounds of the abdomen; and by distending and compressing organs in emphysema. 2. As the medium of an injurious temperature. Air, introduced into the serous and synovial cavities occasions inflammation by its coldness: at the temperature of 36° cent., the articular, cranial, thoracic, and abdominal cavities may be opened without danger of inflammation, in as far as the contact of the atmosphere is concerned.

M. Guyot adopts air as the vehicle of the "heat of incubation" because it unites all the physiological conditions appropriate to our organs, which are not fitted to sustain long submersion in water, or the continued action of humidity; neither can they support a water-heat at the degree of incubation; lastly, water, cataplasms, &c. penetrate and swell the epidermis and other parts, so that the bad effect of the humidity neutralizes, in some degree, the beneficial influence of the heat, although there are certain cases in which moisture may be advantageously combined with heat.

By incubation, then, M. Guyot understands a temperature of 36° cent. applied to the body by means of heated air. He distinguishes three species of incubation:

1. Local or circumscribed, as that adapted to amputations, wounds, ulcers, white swellings, &c. the action being confined to the part to which the remedy is immediately applied.

2. Diffuse, acting on a considerable portion of the body, to reestablish a function, or restore the equilibrium of the circulation or innervation, as in chlorosis, amenorrhea, phlegmasia dolens, extensive œdema, ascites, neuralgia, &c., and in affections which have no defined localty to which heat can be applied.

3. General incubation, which might be applied in rachitis, scrofula, premature birth, or defective development of children, &c.

Incubation is also divided into constant, or that which is continued throughout the case, and intermittent, or that which is suspended from time to time. Continued incubation ought to be maintained day and night without any interruption, except that occasioned by dressings and the proper disposition of parts. Intermittent incubation may be applied for six or eight hours in the day, or all day and every day; it may be applied only during the night, and every night; or lastly, it may often be necessary to prolong the incubation for several days, to discontinue it for the like period and then renew, and again discontinue it in an alternate manner.

The remainder of the second part of M. Guyot's work is occupied with a description of the apparatus which he employs for the application of heat. For this we must refer the reader to the book itself, where the text is illustrated by plates, the absence of which would render any attempt at description on our part unprofitable.

The third part is occupied with a copious detail of cases exhibiting the results of the treatment by incubation. The cases in which M. Guyot has tried his peculiar treatment are the following:

*Ulcers.* Of sixteen ulcers, occurring in the persons of fourteen patients, nine were completely and permanently cicatrized; five were reduced from very large to very small dimensions; and two resisted the treatment entirely. Some of the cases which were cured were of an inveterate kind, and one patient was a man aged 67 with an ulcer on the inner malleolus of twenty-five years standing.

*Wounds and diseases of the skin and cellular tissue.* The cases which come under this head are: 1, A large callous and fistulous sore, resulting from an abscess in front of the *tendo Achillis*, and which had resisted all treatment for nine months. Under the treatment of M. Guyot the wound was healed in fifteen days with the exception of the fistulous orifices, which, however, now discharged a healthy pus. On the twenty-fifth day the superior fistulæ had ceased to suppurate, and on the thirty-second they were cicatrized and all callosity had disappeared. In thirty-six days there were no remains of disease, except the two inferior fistulous orifices. At this period M. Guyot lost sight of the case. 2. An immense lacerated wound of the left arm which had been torn by machinery. It was healed in twenty-three days. 3. A wound of the heel resulting from an operation for the cure of a callous ulcer. The wound itself had assumed the form of an ulcer, and would not heal. By the use of incubation it was healed in eighteen days. 4. A case of phlegmonoid erysipelas terminating in gangrene, which had destroyed the integuments on the anterior part of the foot, and the anterior and inferior half of the leg, and left, after the detachment of the sloughs, a profusely suppurating surface. The symptomatic fever was severe and typhoid, and accompanied with watery diarrhea. Two days after the commencement of the treatment by incubation, the suppuration was diminished to one half, the wound was covered with granulations, and the fever had ceased. In thirty-nine days the wound being nearly healed, it was consigned to ordinary treatment. 5. Phlegmonoid erysipelas in consequence of division of the tendo achillis; treatment successful. 6. Eczema of the right leg, of several years standing, cured in twenty-three days, a year having elapsed without any return of the complaint. 7. Crushing of the foot with wound of the integuments, and intense pain which did not yield to leeches or poultices. Incubation completely relieved the pain in two hours, and in nine days the patient was able to walk. 8. Œdema of the arm, forearm, and hand, with unhealthy suppuration, remaining after an attack of phlegmonoid erysipelas which had commenced at the elbow. The cure was complete in eleven days. 9. Œdema supervening on fracture of the thigh, with effusion (of what is not stated) into the knee-joint; treatment successful. 10. Phlegmonoid erysipelas, occurring in a cook who had struck his hand against a calf's tooth in cleaving the head; treatment successful. 11. Crushing of the foot with sloughing; treatment successful.

*White swelling.* Of this disease M. Guyot records 6 cases which were subjected to his peculiar treatment. In 4 the knee was the part affected, in 1 the shoulder, and in 1 the wrist. Of the knee cases, the 1st was not cured; but the instance is not in point, for the temperature employed was 45° (113° F.) raised to 60°·1, (140° F.) and not, therefore, the temperature of incubation. In the second case incubation was followed up by blisters and cauteries, and a complete cure was obtained. The third case grew worse under the treatment by incubation, which was therefore abandoned. In the fourth case an inprovement was effected, but it was only temporary. The shoulder case was of doubtful character, being considered by some as white-swelling, by others as spina ventosa, and by others again as a separation of the epiphysis, or fracture of the neck of the humerus, which had been neglected. However this may have been, the patient, a boy 10 years of age, was pallid and exhausted with pain, suppuration, repeated leeching, and continued low diet. The disease had originated four months before in a fall on the affected arm, which was succeeded by pain in the joint and, after fifteen days, by considerable inflammatory swelling, which gradually assumed the chronic and serious character presented by the case when it first came under M. Guyot's care. At the commencement of his treatment, he determined to apply the heat for ten hours only every day. The limb was so disposed as to prevent motion in the diseased parts; steel pills were prescribed, and a meat diet enjoined. In sixteen days the tumour took on a better aspect; the suppuration was less copious and less sanious; the pains were gone, and the tenderness on pressure was much abated. As the progress of the case was considered slow, the heat was now applied uninterruptedly. In four days more, the tumour was reduced to a third of its former circumference; the suppuration was very thick, and scanty. In less than a month the cure appeared complete. Some months after, however, tumefaction reappeared and two fistulous canals reopened, but there was no constitutional disturbance, and by a renewed application of the heat the symptoms were subdued, and the patient finally recovered with the perfect use of his limb.

*Rheumatism.* Only two rheumatic cases are given, both of the chronic kind. The first was periostitis of the tibia, originating in a blow, and accompanied by pains which, M. Guyot says, were "very evidently of a rheumatic nature:" this is not so perfectly evident to us, but as we do not know what the nature of rheumatism is, and as we are wont to hear the name of "chronic rheumatism" applied to all sorts of pains from all sorts of causes, we will not stop to discuss the matter. The second case was rheumatism of the knee of some weeks standing. Both cases were cured under the use of incubation, the one in eight, the other in twelve days.

In his "résumé," M.Guyot has associated, under one head, "affections lymphatiques, tumeurs blanches, rhumatismes." But "affections lymphatiques" is a very vague expression, and as no particular instances are given, we have discarded the "affections" altogether; we have also separated white swellings and rheumatisms, as things having no natural affinity.

*Hysteria.* One case of this disease is recorded, which was combined with chlorosis, and was of that irregular kind so frequently met with in practice, simulating various maladies at different times. The symptoms at the period when the patient came under the treatment by incubation were, entire sleeplessness, continual palpitation of the heart, nausea, vomiting, acute pain in the right iliac region, epigastrium, hypogastrium, and kidneys; extreme weakness; fainting on assuming the erect posture, &c. Incubation was applied to the lower half of the body, and, in six hours, produced one of those marvellously sudden transitions from disease to health, which not unfrequently occur, in hysterical cases under every variety of treatment. In six hours, the patient, a young lady of 19, was free from all complaint. For nearly a month she was subjected to incubation for six hours every day, and no further nervous symptoms appeared, the appetite and strength returned, and a complete cure was obtained.

*Malignant or ill-conditioned sores.* Two cases of this nature are mentioned. One is that of an ulcer, the particular characters of which are not specified occurring on the right side of the nose in a Hungarian Count. It was much benefited by incubation after having resisted ordinary treatment, but was not healed when the patient departed for his own country. The other case is that of a lady who had a cancerous ulcer of the worst character on the right side of the nose. M. Guyot conceives that the incubation which was here applied was useful only as a preliminary measure; it modified, in a remarkable manner, the mammellated and tuberculated surface of the sore, contracted its limits, caused the redness and pain to disappear, and predisposed the tissues to cicatrization. The arsenical paste was then applied, and the cure became complete.

*Amputations.* M. Guyot gives the details of thirty-two cases in which the treatment by incubation was applied to the stump. after various amputations. Of these cases he gives reasons why eight should not be taken into the account,—the unfavorable state of the patient, or the inefficient application of the treatment, rendering them unfair criteria. Of the remaining twenty-four cases, the results were as follow. Thirteen amputations of the thigh,—eight cures, five deaths; eight of the leg, —five cures, three deaths; one of the fore-arm, cure; one of the great toe, cure; one of the ring-finger, cure.

When we compare this statement with the average mortality after amputations in the Parisian hospitals, a wonderful contrast certainly appears in favour of incubation. M. Guyot affirms that the recoveries in those hospitals after amputation of the thigh are less than one in six, and tells us that M. Dupuytren said "one cure in three is good; but two cures, that's magnificent." We are not enabled to state with accuracy the average of mortality in these cases in the London hospitals; but we venture to assert that the surgeons attached to them would feel anything but elated by the success here characterized as magnificent. In considering the causes of M. Guyot's comparative success, it should not be forgotten that he seems always to adopt union by the first intention when it is practicable. This proceeding, in fact, makes the stump perform "incubation" upon itself, and it may be doubted whether the application of an artificial temperature, as practised by M. Guyot, would have any appreciable effect. One thing is certain, namely, that union by the first intention is quite sufficient to account for the superior success of any treatment wherein it is adopted, over any other in which it is not; and it is well known that this beneficial practice, though much more frequent in France than it used to be, is still not nearly so general as in this country.

*Puerperal peritonitis.* One case, which appears to have presented the symptoms of this disease in a severe form was very successfully treated by "incubation" applied to the abdomen.

We believe we have now placed before our readers the most important contents of M. Guyot's book. He is a very immethodical writer; there is little classification of cases throughout his work, and the fourth part, called an "analysis and discussion of facts," by no means assists us in reducing the rest to order; so that we have been obliged to bring his principal results together as we best could, in the hope of omitting nothing that was of much consequence.

Some of our author's theoretical views, when he does not strain them too far, are sufficiently rational, while the practice which he advocates appears to have been successful in his own hands, and is therefore entitled to an impartial trial at the hands of others.

## ART. XVIII.

*Udkast til Lov om Medicinalvæsenet i Norge, &c.—Christiania*, 1844.
*Prospectus of a Medical Bill for Norway. Presented by the Royal Commission.—Christiania*, 1844. 8vo, pp. 188. (*June* 14, 1844.)

WHILE in Great Britain we are at the present moment zealously labouring for the amendment of the legislative acts relating to the practice of the healing art, it is gratifying to observe, that in other lands a similar necessity for medical reform is called for by the altered position and by the improved education of medical men.

It is generally urged, by those opposed to any change of the present system in this island, that the physician, surgeon, and apothecary, in foreign countries, are the mere tools of a despotic government, and that in Great Britain alone, true liberty is enjoyed by the medical practitioner. Whether such liberty is preferable to the protection accorded to the profession in Austria or in Prussia, is a question we will discuss elsewhere; but we may adduce the present outline of a medical bill for Norway, as a proof that it is not *despotic* governments alone which have found it necessary to revise and improve the laws which regulate medical practice. By a singular coincidence, medical bills for England and for Norway have appeared within two months of each other, and each has been promulgated by the ministers of the crown under very similar circumstances. Sir James Graham has left his bill for the space of six or eight months to the consideration of the profession, while Dr. Holst and his colleague have at the command of the Government Education Commission, drawn up and published the present bill for Norway, to be submitted to a similar ordeal before it is presented to the Storthing or parliament of that country. From the preface we learn that the commission have published the present outline of a bill, to obtain from all those whose knowledge of the subject entitles them to consideration, the most complete expression of their opinions as to its merits or defects.

The bill is divided into seventeen chapters, which occupy the first sixty pages; the remaining 120 pages being devoted to long notes and explanations of its various clauses. In these notes or appendix, we find the fullest account of the reasons which have influenced the framers of the bill in forming its various enactments; so that not only the bare measure itself, but the very motives which have guided its authors, are frankly submitted to the consideration of the medical profession.

CLAUSE I forms the very groundwork of the whole bill, by creating a medical college or council for the exclusive superintendence of all affairs relating to the medical profession.

The old Norwegian College of Health, which held its sittings in Copenhagen, during the union of Denmark and Norway, was, of course, dissolved when the latter kingdom was united to Sweden; and up to the present day its medical regulations were directed by no less than three different departments of the government; viz., that of the church, of the army, and of the navy. The inefficiency of such a divided administration had long been deeply felt, and consequently the first effect of the new bill will be, to establish in Norway, as is proposed also in England, a central council of health and medical legislation.

The council will consist of only three members, a number which is quite sufficient to regulate the medical affairs of so small and thinly-peopled a kingdom as Norway. The members will be nominated by the government; two being chosen from among physicians in the civil department, and the third from those attached to the army. A fourth, or extraordinary member, is to be chosen from among the apothecaries; but his assistance will only be required in cases relating to chemistry and to pharmacy.

The College will exercise a careful superintendence of all practitioners in medicine, and will publish an annual list of those who are qualified to practise in every branch of the healing art.

Clause ii treats of the duties of medical men in general. No one is to be allowed to practise medicine in Norway, who has not passed his examination at the University of Christiania. All who practise without being duly licensed will be punished by fines and imprisonment. The king and his royal court are, however, allowed to employ foreign physicians, though it does not seem to be inferred that they may intrust themselves to the power of quacks or unqualified individuals.

It appears that in Norway as in most continental states, the country is divided into official districts, to each of which there is appointed a medical officer. This does not however, exclude others from settling in the same districts; but the above practitioner becomes a sort of government official, whose duty it is to report immediately the outbreak of any epidemic, either among the human race, or cattle, to the superintending physician, or inspector, who has several districts under his care.

No medical practitioner may trade in drugs, or have any connexion with an apothecary's shop. (But in remote country districts he may keep medicines for his patient's use, if no apothecary's shop be within reach.)

A medical man who shall exhibit gross ignorance in the practice of his profession may be struck off the roll of qualified persons, but he shall not be amenable to punishment by common law.*

Clause iii. Of district inspectors. (Amts Læger.) Each inspector shall have several districts under his command, and shall be at the head of the practitioners within his department. He himself, however, is in some measure subject to the lay officers of the government, as he cannot leave his department for twenty-four hours without permission from the presiding magistrate. He will act at the same time as a kind of registrar-general, and will receive, every January, the reports from the several district practitioners as to their sanitary condition.

When a practitioner settles in any district he is bound immediately to give notice thereof to the district inspector.

Clause iv. Of district practitioners. They are, as before noticed, subject to the inspector-physician of districts, and are obliged to give notice immediately of any infringement of the regulations regarding practice. All these officers receive a salary from the government, and upon their death a pension is settled on their widows. They are obliged every year to furnish a report of the sanitary condition of their district.

Clause v. Of inspector-physicians of towns. (Stadts Læger.) One is appointed to each of the three capital cities of Norway, and also to such other of the large towns as the government shall decide them to be necessary for. They rank with the country inspectors of districts, and their duties are of a similar description.

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* We may here observe that the science of medicine and surgery are comprehended in Norway under one head, and that although the words physician and surgeon are occasionally employed, the name of "Læge" or "healer" is that which in the Danish language expresses every practitioner of the healing art. Perhaps the popular meaning attached to the name of *Doctor* in this country approaches nearest to the Danish appellation of Læge. The licentiate in medicine and surgery of Sir James Graham's Bill would come nearer to the "Læge" of Norway.

Clause vi. Of midwives. For these, too, Norway is divided into districts, but the number of midwives for each is to be determined by the local magistracy. They are required to undergo a strictly defined course of study, the expense of which, if they themselves cannot defray it, is to be borne by the commune to which they belong; and should they subsequently wish to relinquish their profession, they must repay to the commune the sum expended upon their education. A certain pension is allotted to those who become superannuated; and this usually is about two thirds of their annual income. Every female, however, is at liberty to employ, if she think fit, an uneducated or unlicensed female as midwife, but the individual so employed may not interfere *medically* with the labour, and if she be proved to have done so, she shall be liable to a fine of from two to five dollars. This is surely an unnecessary provision, as it opens the door to much unqualified practice; and it would, we think, be very difficult to define the extent of assistance which may be given without incurring a penalty.

Clause vii relates to infections and epidemic diseases. Immediate notice is to be given of the outbreak of them by the district practitioners.

Clause viii. Of vaccination. No individual can enter as a scholar in any school or institute, private or public, nor may he be confirmed or married, without affording satisfactory proof of having had either cowpox or smallpox. But this regulation does not apply in cases where it shall be proved that the parties have been vaccinated twice without effect. In case of smallpox breaking out in any house or village in the country, each inhabitant shall be bound to have himself vaccinated, unless he have previously had smallpox, or have been vaccinated *successfully* within the last five years. Inoculation for smallpox is declared penal, and punishable by fine and imprisonment.

Clause ix. Of quarantine regulations. This is a chapter of great length, and enters fully into the various regulations for the protection of Norway from infectious diseases brought by shipping. A distinction is made between the period of quarantine for yellow fever or for cholera, and that for the oriental plague. Where the plague actually exists on board, no ship can be freed within less than thirty days, but if the vessel contain goods liable to transport the infection, and yet no case of plague be proved to be on board, or to have occurred during the passage, the term of detention is only twenty days. If the vessel come from a suspected port, ten days are deemed sufficient.

Clause x regulates provincial hospitals and infirmaries.

Clause xi regards the army medical staff.

Clause xii. Of dentists. They are not allowed to exercise more than the simple art of drawing, filing, and replacing teeth; and all surgical operations on the jaws are strictly forbidden, unless they be at the same time authorized medical practitioners.

Clause xiii. Of veterinary surgeons. None are permitted to practise without a regular education and license.

Clause xiv. Of apothecaries (or chemists and druggists.) In all countries excepting in England, the trade of the apothecary is strictly separated from the profession of physic. In Norway, as in other continental states, the apothecary is a well-educated individual, who must obtain a regular license, after undergoing a strict course of instruction in chemistry, pharmacy, and the collateral sciences. With a population rather less numerous than that of London, Norway has only forty-five licensed apothecaries, but it must be remembered that in all remote districts the medical practitioner is allowed to keep a certain amount of drugs, for which, however, he is only permitted to charge his patients 10 per cent. above the trade price at which he receives them from the apothecaries.

The course of preparatory study for an apothecary's license is, in our opinion, not sufficiently extended. After serving for three years as an apprentice in an apothecary's shop, he is to be examined by the deputy inspector-physician of the district, as to his possessing the amount of knowledge necesssry for the more responsible situation of assistant. Should he be found sufficiently qualified, he must remain at least *two years* in this second capacity, ere he can be admitted to his pharmaceutical examination ; and during this period, his master is bound to afford him every means of acquiring the necessary knowledge. Having passed his pharmaceutical examination, he then receives his license as an apothecary, but must wait till a vacancy occurs, to commence business on his own account.

A fine of ten specie dollars is imposed upon every apothecary who shall sell any medicines without a prescription from an authorized practitioner. But certain of the simpler drugs and preparations may be sold "over the counter ;" the number and nature of these being determined by the College. The price of drugs is fixed annually by a published tariff; and whoever demands more than legal charge for medicines is fined.

No poisons can be sold without a physician's order ; and if any be required for mechanical, chemical, or manufacturing purposes, they may not be delivered to the parties demanding them, unless an attestation be produced, signed by the clergyman or bailiff, stating for what purposes they are required. All poisons are to be delivered sealed up in a black paper, with the word *poison*, and its nature, inscribed thereon.

CLAUSE XV. Of interments of corpses, &c. All burial-grounds that may be formed for the future, must be placed at least 1000 ells from the nearest houses of the town or city; and no grave either there or in the old cemeteries within the town, can be reopened until the lapse of twenty years from the date of the last interment. No bodies shall be interred in any vault beneath any church or chapel in the kingdom (whatever prescriptive right thereto may be claimed), unless the corpse be hermetically sealed, in a chest of metal, or unless it be certified by a legal practitioner that it has been properly and completely embalmed. The corpses of those who have died of pestilential diseases are to be buried within forty-eight hours after death ; and in such cases, no assemblage of friends to mourn in the chamber of death (sörgestuer), will be permitted ; nor must the body be carried to the grave by bearers, but conducted thither in a hearse. The post-mortem examination of the body may not be refused by the friends, if demanded by the physician who has been in attendance on the case. The bodies of criminals and those who die under sentence of perpetual imprisonment, are to be given to the Anatomical School, for dissection;

as also the corpses of those who die in the hospitals, unless their relatives shall object to their being thus disposed of.

Clause xvi. Of remuneration for medical services. All medical practitioners are entitled to recover for attendance; and, in case of the death of the patient, their claims are to be considered before those of the other creditors. A certain tariff of charges is laid down for all occasions, and the fines for exceeding these are exceedingly heavy, amounting to from one to fifty dollars for the first offence, and from ten to two hundred dollars for the second. From the great distance which separates habitations in Norway, much time is lost upon journeys, and consequently a certain mileage is laid down in the tariff; and the practitioner is also entitled to remuneration, if he spend several hours with the sick person.

For each post-mortem examination performed on account of the government, or at the *request* of friends, he is entitled to receive the sum of five specie dollars.

Clause xvii, and last, repeals all former statutes.

We trust that this analysis of the proposed Norwegian bill will not be unacceptable to our readers at the present interesting crisis of British medical affairs. In many respects, the bill is far more extended and comprehensive than the measure of Sir James Graham; but we must remember that in Norway there already existed a connexion between the medical profession and the state, which, up to this period, had never been recognized in Great Britain. Both bills, however, assert, as the basis and groundwork of true medical reform, the necessity of the Council or College of Health and Medical Education, and which shall be in connexion with the government. The ordinances relating to medical police, comprised in the Norwegian bill, are of course not to be found in the proposed measure of Sir James Graham; for in England, with its vast and intricate code of laws, the various questions of medical police would require separate consideration, on account of the vast power of opposing interests—commercial and otherwise—which would have to be conciliated or attacked. There is, however, one portion of the Norwegian bill, which will enlighten many in England on the question of illegal practitioners. None of our readers will fail to notice the decided tone adopted, as regards unqualified practitioners, and the summary punishment to be inflicted on all who transgress in this respect; nor can we discover in the copious explanatory notes of the appendix, that the slightest doubt is expressed by the authors of the bill, as to the reception of this part of their proposed measures. The idea of even indirectly legalizing quackery was reserved for England alone; nor can we wonder, therefore, that while the laws of all other European states are from time to time appealed to, as authorities for some of their proposed enactments, the medical legislature of England is never once hinted at by the learned authors of the Norwegian bill. And this omission is surely not accidental; nor can it arise from ignorance of the English language or laws, with which Dr. Holst is well known to be admirably conversant. We fear that he has found our medical legislature so imperfect and scanty, so inferior to that of other countries, which, in our insular pride, we regard as beneath us in civilization, that he has met with no one enactment, out of the few which we possess, worthy of being translated to his native land.

## ART. XIX.

1. *A Bill for the better Regulation of Medical Practice throughout the United Kingdom. Prepared and brought in by Sir James Graham. Ordered to be printed, 7th August,* 1844. Folio.
2. *Charter of the Royal College of Surgeons of England, granted Sept. 14th,* 1834.—*Bye-laws and Ordinances of the Royal College of Surgeons of England.* 1844. (*Not published.*)
3. *A Statement of the Society of Apothecaries, on the subject of their Administration of the Apothecaries' Act.—An Address of the Society of Apothecaries to the General Practitioners of England and Wales, on the Provisions of the Bill "For the Better Regulation," &c.—London,* 1844. 8vo, pp. 44 and 56.
4. *A Manifesto by the Medical and Surgical Association of the Borough of Marylebone.—London,* 1844. 8vo, pp. 16.
5. *An Exposition of the Laws which relate to the Medical Profession in England, &c.*—By JOHN DAVIES, M.D. &c.—*London,* 1844. 8vo.
6. *Remarks on Medical Reform, in two Letters addressed to Sir James Graham.* By Sir JAMES CLARK, Bart. M.D., F.R.S.—*London,* 1842-3. 8vo, pp. 30 and 40.
7. *An Introductory Discourse on the Duties and Conduct of Medical Students, &c.* By Sir B. C. BRODIE, Bart.—*Lond.* 1843. 8vo, pp. 34.
8. *A Letter addressed to the Secretary of the North of England Medical Association.* By C. T. CARTER, Esq. (*Not published.*) 1844.
9. *A Speech at the Derby Meeting of the Provincial Medical Association, &c.* By CHARLES HASTINGS, M.D. F.G.S. 1844. 8vo, pp. 28.

THE momentous subject of MEDICAL REFORM, now irresistibly forcing itself on the attention of every member of the profession, seems naturally to present itself for examination under the following heads:

I. What are the Grievances complained of by the members of the Medical Profession, and for which they are seeking redress under the name of *Medical Reform?*

II. Are the Grievances of such a kind as to justify the cry for Reform so generally and so loudly raised?

III. Are the Grievances susceptible of redress through the means of Medical Reform, or through any other means?

IV. If the Grievances are susceptible of redress, are the means proposed in the Bill of Sir James Graham, or in the various publications on Medical Reform, calculated to yield it?

In an inquiry like the present, addressed to the members of the medical profession, it would be a work of supererogation, to enter into any detail respecting the nature of their grievances. It is not, therefore, our purpose, on this occasion, to offer any reply to the first two of these questions.

To the third we shall content ourselves with returning a simple but qualified affirmative. In the long catalogue of real grievances there are, certainly, some which no legal interference can remove; and there are some things paraded as grievances, which we would demur to admit as such. But we cannot enter into any examination of either of these points at present: they will, however, be incidentally noticed in the course of our inquiry.

To the last of these questions the present article is to be considered as a detailed reply. In drawing it up, we shall have to pass in review and submit to strict and, as we believe, impartial criticism, every proposition in the Bill, having any important relation to the medical profession. We shall, at the same time, take occasion to consider several other analogous matters of importance, which, although not noticed, or but slightly noticed in the Bill, have been justly regarded as evils calling loudly for reform. Our inquiry will thus come to embrace nearly the whole system of medical polity; including the entire subject of the Organization of the Profession, past, present, and prospective—at least in England. This will be seen by the following Outline of the chief subjects treated of; which we the more willingly introduce here, as the glimpse thereby afforded of the whole inquiry may, by showing beforehand the bearings of the different parts, facilitate the reader's appreciation of each, in the progress of perusal.

I. Education of Medical Practitioners.
II. Examination of Medical Practitioners.
III. Civil Equality of Medical Practitioners.
IV. Registration and Licensing of Medical Practitioners.
V. Incorporation of the Medical Profession.
VI. Representation of the Medical Profession.
VII. Government of the Medical Profession.
VIII. Privileges and Protection of the Medical Profession.

### I. *Of the Bill in relation to the Education of Medical Men.*

The essential thing, in regard to the education of medical men, is that it should be *good*: that is, that it should be sufficient, first, to cultivate and improve the intellect, so as to render it capable of receiving and profiting by scientific truths; and, secondly, convey a sufficient amount of medical knowledge to afford a fair warrant that the possessor is qualified to practice medicine, with probable benefit, at least without injury, to the public. In other words, care must be taken that the candidates for medical practice should have obtained—first, a good *general*, or what has been called *preliminary* education; and, secondly, a good *medical* education, before they are licensed to practise any department of the medical art. Now, it must be admitted that Sir James Graham's Bill either provides for directly, or has the means and power of providing for both of these essential requisites. And it further provides, that this education shall be equally good in every part of the empire.

Of course, in making these statements, it is taken for granted that the new body instituted for the government of the profession, the Council of Health and Medical Education, will be so constituted as to be well qualified to judge what is the fitting education for a medical practitioner, and also shall possess the desire to see such an education carried into effect. And when we consider that this is one of the main objects for which the council is to be established, it seems absurd to conceive that its members, however appointed, should not possess the qualifications and the disposition here assumed. We shall have afterwards to consider in what precise manner this council ought to be formed: we at present assume that it is a body both able and willing to perform its duties.

Nor is this the place to inquire into the expediency or advantage of establishing, more markedly than before, as is done by the Bill, different grades in the profession. Regarding these grades as established, we shall consider education, as provided by the Bill, in relation to each of them.

1. *Licentiates of medicine and surgery, or General Practitioners.* Nothing is fixed in the Bill with regard to the period of study, or course of education for this class of practitioners. One very important point, however, having essential relations to a good education, is determined by it, viz. the abolition of apprenticeships. The necessity of serving an apprenticeship interfered, most fatally, with the obtaining of a classical or general education; and the system was otherwise most injurious to the mind of the medical student, by fostering routine and empirical habits of thought and practice, obstructive to the after-reception of knowledge on more scientific and philosophical principles. A large portion of the period formerly devoted to the duties of the apprenticeship may be, and doubtless will be devoted to the acquisition of classical and general knowledge, and yet ample space will be left for the acquisition of medical knowledge.

The age at which the license is attainable is fixed at twenty-one; but it is a question well worth considering, whether this might not be advantageously raised to twenty-two or even to twenty-three. It may, indeed, be argued, (1) that, inasmuch as it is only in actual practice that the niceties of practical tact and skill can be acquired, and, (2) as the great majority of young men, on first entering the profession, will be more or less subordinate to their seniors, as assistants or otherwise,—there is no substantial reason for prolonging the period of probation beyond that fixed in the Bill. These reasons are not satisfactory to us; and we hope the point will be well weighed during the reconsideration of the Bill in committee. The following remarks on this point, by Sir James Clark, are most apposite. They probably indicate the best practical course:

> "A youth possessed of the natural talents which qualify him for becoming a medical practitioner may easily acquire the requisite preliminary knowledge, and much more, if his education be well directed, by the time he has reached the eighteenth or nineteenth year of his age. He has still four years to devote exclusively to the study of his profession; for I agree with a late writer on Medical Reform [Sir B. Brodie] that young men are not generally fit to enter on the practice of their profession before twenty-three years of age. At the same time, I admit that fixing a particular age may often be attended with great inconvenience and sometimes injustice to candidates: if, therefore, an age is fixed, it ought, I think, to be a minimum. If a good general education is enforced *before* the student enters on his medical studies, and if his practical knowledge, as well as his scientific acquirements in medicine, are well tested, the age need form no

impediment to the candidate's obtaining a license. When a young man has proved himself to possess a competent knowledge of his profession, he may fairly claim the privilege of exercising it."*

The Council of Health is fully authorized to demand, and doubtless will demand, that this period set apart for the acquisition of general and professional knowledge, shall be really so devoted.

In the first place, by enforcing a registry of students at all the medical schools, it has the means of ascertaining whether the students, previously to entering, possess the necessary amount of preliminary knowledge; and, subsequently, whether the prescribed courses of medical instruction have been really followed.

Secondly, the Council, having power to make such changes as it pleases, in any of the schemes of the course of study required by the colleges empowered to examine candidates for the license (§ 19); also to send its secretary, or any of its members, to attend at such examinations, and see that they are satisfactory, and, if they are found unsatisfactory, "to refuse to register upon the testimonials of the body so in default" (§ 25); and having, moreover, the power of giving or refusing their sanction to all the bye-laws of the colleges—including, of course, those relating to education (§ 22); it is clear that it can enforce such courses of study as it thinks proper. And, as already observed, it would be monstrous to suppose that a Council of Medical Education should sanction aught less than such a course of education—preliminary and professional—as the present state of medical science, and the high character and standing of its professors indicate as proper. It would, however, have been satisfactory to the friends of medical education—the best friends of the profession—if the Bill had contained some more positive enactments as to the period and course of study required of candidates for the license, as in the case of physicians and surgeons. It would also have been agreeable to observe some more efficient arrangement for testing, in all cases, the proficiency of the candidates in classical and general knowledge. If such an arrangement is not introduced into the Bill, we trust, at least, that care will be taken that the College of Health is kept sufficiently awake to its immense importance. For our own parts, we entirely coincide in opinion with Sir B. Brodie and Sir James Clark, in regarding the enforcement of a proper PRELIMINARY EDUCATION, as of equal importance, at least, with that of the strictly professional part of study. Here it was, as already observed, that the system of apprenticeships produced such disastrous effects,—throwing, in innumerable instances, a blight over the whole future intellectual progress of the individual. In reference to this fact, Sir Benjamin Brodie may well say, that "it is very much to the discredit of the great medical institutions in this country, that, except in some few instances, they have not given even an indirect encouragement to the obtaining a good general education, and, in *one instance*, the legislature have actually done their best to throw an impediment in the way."† In Sir James Clark's 'Second

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* Second Letter to Sir James Graham, pp. 16-17.

† Introductory Discourse, p. 19. But while thus strongly condemning the system of apprenticeship which has hitherto prevailed, we wish to guard ourselves against being supposed to condemn *every* system of apprenticeship. On the contrary, we have an equally strong opinion, that no man can be qualified to enter upon practice for himself, who has *not* served a practical clinical training of some sort, under this or some other

Letter,' the reader will find this question treated of in an admirable manner. We can only find room for one brief extract here, but we earnestly recommend the perusal of the whole section, as a masterly exposition of this all-important subject :

> "Had the scientific education of medical men been better attended to, the nation might have been spared the loss of much human life, and the fruitless expenditure of much treasure; and the public health might have attained a much higher standard than it has yet reached. It is from being uninstructed in the common principles of philosophy, and, consequently, unacquainted with the laws by which the various physical agents amidst which we live are regulated, and the effects of these in promoting health and inducing disease, that medical men have failed in some of their highest duties—that they have been less efficient ministers of health and less successful investigators of disease than they would otherwise have proved. It is in the power, as it is unquestionably the duty, of the legislature to put an end to such a state of things; and an excellent occasion now presents itself for improving the education of medical men generally, and, above all, in its most neglected, but not least important department—PRELIMINARY INSTRUCTION." (pp. 17-18.)

We shall hereafter have to consider the merits of the arrangements for examination generally, provided by the Bill. At present we shall only observe, that though we regard them as very defective, and think that they ought to be changed, we cannot bring ourselves to believe that they can fail to be tolerably effective in practice. We are well aware of the fears expressed by some, that the examining bodies, (the Colleges of Physicians and Surgeons,) may be led to sacrifice the interests of the class of licentiates to the interests of their own grades of the profession, by *keeping the former down* through the instrumentality of a low and lax system of examination. To say nothing of the monstrous professional treachery involved in such a project, we may surely hope that if it could be entertained, it would be defeated by the circumstance that the acts of the council of health will be all subject to the direct supervision of parliament, and must be performed under the unsleeping eye of public jealousy.

2. *Surgeons.* By making the minimum age at which the diploma or license of surgeon can be obtained, *twenty-five*, it is of course intended that the additional period of four years beyond that period at which the degree of licentiate may be obtained, shall be devoted to study in schools and hospitals. It cannot, therefore, be doubted, that if the licentiate were at all qualified for the practice of his profession by his course of study, the surgeon must be still better qualified generally, and especially in what may be regarded as his peculiar department, viz. the treatment of external diseases, and chirurgical operations. While admitting this, we

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name. A dressership, a clinical clerkship, a house-surgeoncy in an hospital, are all apprenticeships, and universally acknowledged to be of the last importance to the students who are fortunate enough to obtain them. But the great majority of general practitioners cannot expect to hold such offices; and it seems, therefore, essential that some equivalent should be found in their case. At present, we do not feel ourselves called on to discuss the subject, but we claim for it the earnest attention of all the friends of medical education at the present crisis. The objections to even an ordinary apprenticeship (of one or two years) do not apply, with anything like the same force, *after* the student has obtained a good preliminary education, as before he has obtained this. But if this should be thought objectionable or unattainable, might it not be a regulation that men *licensed* at the age of 21 should not be allowed to practise *independently*, but only as ASSISTANTS of other practitioners, until they had reached the age of 22 or 23 ?

cannot overlook the fact, that, as far as the test of *qualification by examination* goes, the licentiate may be better qualified, in one most important department, than the surgeon, viz. in *practical medicine.* By the enactments of the Bill, the licentiate is required to pass examinations in every department of medical practice. In England, for example, he must be examined "by the Royal College of Physicians of England, assisted by the Court of Examiners of the Apothecaries' Company; and also by the Royal College of Surgeons of England," (§ 14.) Of course, the object of sending the licentiate before the College of Physicians, is to test his knowledge of practical medicine, the practice of which, it need not be stated, constitutes by much the greater portion of his professional duties. The surgeon, however, is only required to be "examined by one of the Royal College of Surgeons of England, Scotland, or Ireland." (§ 15.) So that as far as practical medicine is concerned, no means is supplied by the Bill for testing the knowledge of the surgeon. In the new bye-laws of the College of Surgeons it is, no doubt, provided that the candidate for the fellowship shall have "attended the medical practice of a recognized hospital for one year, and lectures on the theory and practice of medicine and on clinical medicine, during two sessions of six months each;" and although it may be fairly presumed that the opportunities afforded by such a course of study as is prescribed, will, in reality, lead to the acquirement of a sufficient stock of medical as well as of surgical knowledge; it is certainly odd that, considering that more than half the practice of all pure surgeons is really medical, no positive provision should have been made by the Bill for testing such knowledge. We presume that this anomaly has arisen not intentionally, but from oversight, and that it will be remedied in the passage of the Bill through the House. The obvious amendment (on the basis of the present Bill) is, that the surgeon, as well as the licentiate, should be examined "by the College of Physicians, assisted by the Apothecaries' Company."

With the exception just stated, the education required by the Charter and Bye-laws of the College of Surgeons is most ample. Indeed, if any fault can be found with the curriculum, it is that it is too extensive. At any rate, no one who reads the Statutes respecting candidates for the Fellowship, as set forth in the "Bye-laws and Ordinances," can entertain any doubt that it will be henceforth impossible for any person to become a Fellow without being possessed of an ample stock of general and surgical knowledge, or that the Fellows, as a body, can be other than accomplished surgeons, in every sense of the word.

3. *Physicians.* The provisions of the Bill seem ample for securing a good and sufficient education for the physician, indeed (with one single exception) almost too ample. In the first place, he must have obtained his degree in some British University, at which he has resided and studied at least two years (§ 20;) secondly, he must have "applied himself to medical studies during at least five years" before he is allowed to take this degree (§ 16;) thirdly, he must have been *afterwards* "examined by one of the Royal Colleges of Physicians of England, Scotland, or Ireland," (§ 16.) and must have "received letters testimonial from the Examining College, of his being duly qualified to practise as a physician," (§ 16;) and lastly, he must have attained his twenty-sixth year before he is registered for practice. (§ 16.)

The few deviations from these regulations, enabling general practitioners to graduate after forty years of age, and enabling the graduates of foreign universities to be licensed as physicians, are hardly worth mentioning; and, at any rate, they do not, in any way invalidate the proposition here maintained, that, with the exception already hinted at, the qualifications of physicians are most fully provided for by the Bill. The exception here alluded to, is the non-enforcement of surgical studies and the want of any examination in surgery. Although an acquaintance with surgery is not so absolutely necessary to the physician as an acquaintance with practical medicine is to the surgeon—few physicians treating surgical diseases—still we hold it to be an axiom based on both reason and experience, that a knowledge of both departments—a *general* knowledge at least—is essential to the practitioner in either.

From this survey it seems to us to be satisfactorily made out, that, even under the defective arrangements for examination established by the Bill, a good though not a complete education will be enforced in all the grades of the profession; and it may be fairly presumed that, under its operation, no medical man will be henceforth licensed to practice who has not shown that he is qualified to do so. Of course, no Bill and no human arrangement can communicate, or can even test the existence of, much that it is most important that a medical practitioner should possess. The Bill cannot make a stupid man clever, or give the power of observation and logical inference to a mind that has it not; neither can it confer the capacity and inclination for continuous study and improvement, or bestow habits of industry, attention, kindness, &c., so essential in the exercise of the medical profession. But it is here decidedly provided for, (always assuming the Council of Health to do its duty,) that every future practitioner must possess such an amount of medical knowledge as must be a satisfactory guarantee both to the members of his own profession and to the public, of his competency to treat disease.

## II. *Of the Bill, in relation to the Course of Study and Mode of Examination of Candidates for the License.*

Beside ensuring a good education in every grade of the profession, the Bill introduces a simplicity and uniformity in the modes whereby this is to be acquired and tested, which constitute decided improvements on the old system. In the first place, the Council of Health is empowered to take care that the same or similar courses of study shall be required throughout the three kingdoms, for each of the three grades into which the profession is divided. Secondly, the educational requirements being the same, the nature of the examinations, and also the amount of fees, will, of course, be the same, or as nearly the same as circumstances may permit, (§ 19.) Thirdly, the students may repair to whatever examination board may be most convenient or agreeable to themselves, e.g., Irish students to the London or Edinburgh board, or English and Scotch students to the Dublin board. Fourthly, the examination boards being reduced to one in England and Ireland, and two in Scotland, [the expediency of reducing these to one is most obvious,] and all constituted on the same general plan, there is introduced a facility of understanding, of planning, and directing the career and educational course of young men destined to the medical profession, which must be very satisfactory to their guardians and advisers, as well as to the students themselves.

So far, then, we must admit, that the provisions of the Bill are satisfactory as regards the prescribed modes of obtaining knowledge, and the *exterior economy* of the arrangements for testing the qualifications of candidates. The Bill, however, contains two great blemishes bearing on the *interior economy* of these arrangements,—one of commission, the other of omission.

1. The first of these blemishes is the proposed *Constitution of the Examining Boards*, which presents several obvious defects.

*a.* We have already referred to an objection founded on the supposed prejudice of the intended examining bodies (the Colleges,) against the class of licentiates. While demurring to the degree and influence of the prejudice implied in the objection, we cannot deny its existence altogether, and must therefore admit the possibility of its evil operation in the way supposed. We have given above some reasons for believing that if it did exist it would be rendered comparatively inoperative. Others, however, think differently; and it must be admitted that *the very belief of its existence* by the general practitioner, is in itself a serious evil, and affords an argument of no mean weight against the constitution of the boards as proposed by the Bill. This objection has been strongly urged in many quarters, and is thus forcibly stated in the Marylebone Manifesto and in the Apothecaries' Address:

> "The provision by which the education of the future general practitioner is placed under the control of a mixed board of physicians, surgeons, and apothecaries, is bad in principle. In such a board the physicians and surgeons will always possess a preponderating influence over the apothecaries. They will be in the dilemma of either continuing the general practitioners upon an equal footing with themselves, in point of medical and surgical education, or of constituting them an inferior grade. The interest of the class represented by the more influential part of such a board, namely, the consulting practitioners in medicine and surgery, will always be to keep a lower grade at as great a distance from their own, in point of medical qualifications, as possible. Thus, even if a penal clause to prevent unlicensed practice were appended to the Bill, the educational tendency of such a board, as respects the great mass of medical men, under whose care the health, limbs, and lives of the majority of the people must fall, would be in the wrong direction." (Manifesto, p. 9.)
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> "The interest of the physicians, as a body, is directly opposed to this improvement and elevation of the general practitioner. The difficulty which this view of the subject presents to the examination of the general practitioner by the physician, has been felt and acknowledged by members of that body, because it cannot fail to render the duty an invidious one, and there will always be this anomaly attending its discharge, that in proportion as the duty of giving a high qualification to the general practitioner is performed with zeal and efficiency, will the physicians be breaking down the distinction which exists between the class which they are educating and themselves, that distinction upon which their very existence, as a separate class, depends. Looking to the constitution of the governing body of the College of Surgeons, the same reasoning applies, and with equal force, to the share which that body is to take in the education of the general practitioner. But it will be said, you ought not to impute to the Colleges of Physicians and Surgeons,

that in the exercise of the powers proposed to be given them by this Bill, they will be actuated by a desire to lower the standard of attainment of the general practitioners, or check their improvement as a class. We reply that our objection to the Bill is, that it gives them the *power* of doing so." (Address, p. 30.)

*b.* The partialities of corporate bodies in favour of their own members are notorious. In the present case, what guarantee have we that the Colleges will select for examiners the men best qualified for the office? We think the chances are much against their doing so. It is not the oldest physician or surgeon, nor yet the man of largest practice and greatest professional experience—the man of most influence in the College—that is likely to be the most competent examiner. The Colleges will, of course, restrict the selection to members of their own body, most likely to members of their Council; now it is a very possible case, that the men most qualified to examine may not belong to the College at all, or hold any prominent place in its ranks. We agree entirely with Sir James Clark in thinking, that "such bodies (the Colleges) are not qualified to test candidates on their scientific acquirements."*

"That power should be intrusted only to an independent body, unconnected with the educating institutions on the one hand, and the medical corporations on the other; a body responsible to the government for its acts, having no collateral interests to divert its attention from carying out in the fullest manner the principles embodied in the legislative enactment."†

*c.* Another most serious objection against the examination boards proposed, is one that has reference to the second of the great blemishes of this part of the Bill, which we shall consider directly. The licentiate of medicine and surgery will have no more reluctance to come before the examiners of the College of Physicians than before the examiners of the College of Surgeons. But the case is very different with the future members of the Colleges themselves. The expectant Associate of the College of Physicians, the B.M. or M.D. of an university of repute, will feel it to be somewhat *infra dignitatem*, to submit himself to the questioning of the Board of Surgeons, and even to the examiners of his own college *when "assisted by the court of examiners of the Apothecaries' Company."* The surgeons, on the other hand, will repudiate the examination of the physicians. Accordingly, the Colleges, more especially the College of Physicians, at least the members individually, do not, we believe, hesitate to point to this double constitution of the examining board, as a main reason for refusing to have their members examined by any other than their own section of it.

For these and for many other reasons which our limited space prevents our noticing, we entertain a very strong opinion that the Examination Board should be constituted independently of the Colleges, and that the members should be nominated by the Council of Health, to hold office for a limited period, but to be reeligible after its expiration.

2. The second defect, under this head, has just been referred to: it is

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* No offence is meant in making this remark. It is founded on the conviction, derived from experience, that few men are qualified for the office of examiners who are not *teachers*—men obliged to keep up their knowledge to the level of the present day, and habituated to the practice of examining.

† Second Letter to Sir James Graham, p. 29.

this—that the Bill does not contain a clause to render it obligatory on every candidate for the license to practise, to undergo the same preliminary examination. In other words, we are of opinion, with Sir James Clark, "that every practitioner, whatever may be the department for which he is destined, should qualify for the duties of the general practitioner," and, in the first instance, submit to the same examination. We would even contend with the same writer, that this examination should be the only one requisite to qualify for practice in any of the grades of the profession; although the subsequent collegiate examinations might still be properly retained, and the possession of the titles flowing from such collegiate examinations, continue to confer peculiar privileges. Few men can now be found in the profession who will deny the essential unity of medicine in all its forms, or contend that the physician should not understand surgery or the surgeon physic. The one examination here proposed would ensure the possession of this general knowledge by all members of the medical body. The common examination, and the common title and license thence derived, could not fail to have a healing influence on the divisions, bickerings, and jealousies that now distract the profession at large, and which, it is to be feared, will be much increased instead of being diminished by the Bill, if carried in its present form. By the plan we are advocating, every one would, in the first instance, be licensed under the common title of "Licentiate of Medicine and Surgery;" but, of course, no one would be debarred from proceeding to seek other titles given under other conditions, and conferring other privileges; or be prevented from devoting himself to whatever department of practice he preferred.

## III. *Of the Bill, in relation to the Equality of Privileges of Medical Men in Practice.*

Here the Bill confers everything which the profession has sought for or can reasonably desire, viz. perfect equality of rights and privileges to every one of the same grade throughout the empire. No college or corporation, nor any other public body, can henceforth interfere with the practice of any individual, in any part of the three kingdoms, wheresoever he may have studied or may have obtained his license to practise. As the Bill, in the enactments last considered, establishes *uniformity of education and qualification among practitioners of the same class, throughout the empire;* so, in that now under review, it establishes *uniformity of privileges*, in the same degree. All the limitation introduced, in respect to community of privileges throughout the empire, is, that physicians and surgeons removing from the part of the kingdom where they have received their letters testimonial, to another, for the purpose of practising, must enrol themselves as fellows or associates of the college of the kingdom to which they remove, paying the usual fees, but without undergoing any examination. (§ 18.) No restriction of this or any other sort applies to the licentiates; and the reason for its being applied to the two other classes is not very obvious.

## IV. *Of the Bill, in relation to the Registration of Licensed Practitioners.*

The plan of a general registration of practitioners, by the Council of Health, and the official publication of a register, for the information of the profession and the public, is an immense improvement on the old system, and cannot fail to be of great benefit. The plan, as proposed in the Bill, is as follows: Every practitioner, after receiving his testimonials from the examining boards, may, on the payment of a fee, have his name inserted in a general register, kept by the Council of Health. This register is to be "published from time to time" [annually]. "And every person whose name shall be so registered, who shall be desirous that his name shall be continued in the published register, shall, in the month of January, in every year," renew his application for registry, when the Council "shall forthwith cause the names of all persons so returned to them, to be published in alphabetical order, in their several classes, with their several places of abode, and dates of their testimonials." (§ 13.)

The establishment of a general registration of all legally-qualified practitioners, and the annual publication of an authentic register of their names, is a measure calculated to be of such essential service to the profession and the public, that it cannot be too cordially received; and no pains should be spared to make this part of the scheme as perfect and practical, and as easily-worked as possible.* Some objections have been made to the plan as stated in the Bill; and some alterations, with a view to its improvement, have been suggested, which merit examination.

1. In the first place, it is objected that the registration is not made *compulsory* in every case. But it is so made to all who wish to be considered as legally-qualified practitioners. In fact, so far as appears by the Bill, this act of registration seems identical with, or to form a part of, the act of licensing. At any rate, it is quite clear that it ought to be made compulsory for every one to register, in the first instance, at least, if it is not already so provided by the bill.

2. Some have objected to the clause rendering it obligatory on every one to send "to the Council his name and place of abode" every year; on account of the trouble, especially where there is no change of abode. But the trouble imposed is insignificant, compared with the attainment of the great object of having a correct register. It is much less trouble than returning the names of ourselves and servants annually to the tax-gatherer: still even this ought to be avoided, if the plan can be well worked without it.

3. Much stronger objections have been made to the amount of the

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* One of the many obvious and important benefits to be derived from an authentic public register, was noticed by Mr. Swain of Devonport, at one of the late meetings. Every one who has resided in the country must have witnessed similar cases to those adverted to by Mr. Swain. "They could all of them," he said, "speak of the annoyance of persons coming among them and practising under the plea that they were qualified to do so; but great difficulty at present existed to ascertain whether they were so qualified or otherwise. They met with persons practising as medical men, whom nobody knew anything about; and although they might ask who they were, they could not always hope for a satisfactory answer to their inquiries." (Lancet, Oct. 12.) Of course, a single glance at 'The Register,' if it existed, would cure this evil.

registration-fee, viz. £5 in the case of a physician or surgeon, and £2 in the case of a licentiate. But if we are right in thinking that this fee is not merely for the registration, but is also for the license to practise, it will seem less exorbitant. Still, as no obstacle that can be avoided, should be thrown in the way of registration, it is highly desirable that the registration-fee should be made as small as the "defraying of the expenses of this act" shall justify. The estimation of the just amount of fee will depend partly on the kind and amount of privileges accruing to the registered. For instance, in what form is the register to be published? Is a fresh register to be published every year? Is a separate copy of it to be delivered gratis to each of the registered, or is it to be sold? If sold, is the price to be high or low?

But here, as in many other parts of the Bill, the appreciation of the particular enactment is rendered abortive by the knowledge that the Bill contains one monstrous clause, which has an important bearing on every other, and which clause, we feel confident, must and will be entirely changed before the passing of the Act. We, of course, refer to that part of the Bill which leaves the practice of medicine totally unrestricted. If this clause were altered, and it were part of the enactment that the licensed alone were privileged to practise the medical art, there would then no longer remain any doubt that the registration should be made compulsory, and there would be then little reason for complaining of the amount of the fee, for securing a privilege of such real importance.

### V. *Of the Bill, in relation to the Incorporation of the Profession.*

The Bill makes no direct attempt to incorporate the medical profession. By registering the members, however, it formally recognizes them, for the first time, as a distinct body; and by placing the Council of Health at their head, connects them, in some sort, with the state. This, as formerly remarked, is an important improvement; but it is not the kind of incorporation which reformers have desiderated. What they have contended for, as a matter of right flowing from their very qualification as practitioners, is enrolment as members of some college or institution, in which they might feel themselves, as it were, at home in their own hall, and have a right to take a part, more or less, in the discussion and direction of their own affairs. If the Bill had contained any arrangement by which such an extensive change could have been effected, it would, unquestionably, have been a boon of great value to the profession, more especially to the largest and most influential part of it, the general practitioners. But the difficulties attending any such incorporation were, doubtless, regarded by the framers of this Bill as insurmountable; or, at least, as involving such opposition from the existing corporations, as would have rendered the passing of anything like a good bill most difficult, if not impossible. The changes made are, therefore, partial and inconsiderable. This is a great misfortune; because nothing would tend so much to produce harmony, good will, and content in the profession, as the union of the different classes in one great college or corporation; or into two or more colleges, separated according to pursuits or grades, yet joined together in a sort of federal union. It is always dangerous to leave any large body of men, of the same general class, to see and feel that they are separated from their brethren by any impassable line of distinction, indicating superiority and inferiority, real, nominal, or conventional. But we believe that the defects of the Bill in this respect, are attributable not so much to its framers as to the members of the profession themselves. It is the old medical corporations, the Colleges of Physicians and Surgeons, that have always stood in the way of such an incorporation of the members of the profession, as would be generally satisfactory: and it is understood to be to their opposition, on the present occasion, that we are indebted for the deficiencies in the Bill which we are now considering. The mistake committed by the minister—and it is a great mistake—was to grant any of the new Charters previously to the passing of the Bill.

It is, however, but just to the colleges and to the government, to admit, that, as far as set forth in the Bill, and, as far as we know, in the charters already granted, or about to be granted to the former, the principle of incorporation is carried a good deal further than it was before. A survey of the different classes of practitioners, in regard to corporate privileges, will show this clearly enough; but it will also show how very inadequate the amount of incorporation still is, to meet the wants of the profession at large.

### I. PHYSICIANS.

It appears by the Bill, that every physician, on obtaining his letters testimonial, and being registered, will be enrolled as an *Associate* of some Royal College. He will thus have a name and station at least; and all that could be reasonably asked for further is simply, (1) that, in his capacity of associate, he should have the right and privilege to meet with his brother associates in the halls of the college, to consider and discuss such affairs as concern the body to which he belongs; and (2) that he shall eventually attain, or at least may attain, the higher dignity of *Fellow*. Whether the process whereby this elevation is effected be by simple seniority or by examination, does not seem material, as long as the dignity is *equally open to all*. But this last is essential. It is, indeed, said that by the terms of the new charter prepared for the College, the number of Fellows is to be limited, and that the limited number is to be created by arbitrary selection and election by the Fellows and Associates. But we can hardly believe that a rule at once so unjust, and impolitic, and one which, we cannot but think, must be obnoxious to the feelings both of the Fellows and Associates, can be sanctioned by the present Fellows of the College. Such a plan must inevitably excite dissatisfaction and discontent among the great body of the Associates, and instead of attachment to the College, must lead at least to estrangement if not to open hostility. The poor Licentiate, Heaven knows, has already been long enough an outcast; and surely it is not too much to expect better treatment for him under his new title of Associate. Wherefore, —knowing, as we do, their general high character and liberal feelings as individuals,—we confidently appeal to the Fellows, in the Hall of their College, and in their corporate capacity, to do him justice.—"Quamobrem magna me spes tenet, si ea, quæ sunt in causa, explicare, atque

omnia dicendo, consequi potuero, hunc locum consessumque vestrum, quem Illi horribilem ac formidolosum fore putaverunt, eum tandem ejus fortunæ miseræ multumque jactatæ, portum ac refugium futurum."*

The mode of admission to the Fellowship, adopted by the College of Surgeons, that, viz. by examination, is much fairer than the one just referred to, because it leaves the door open to every one who may choose to fulfil the conditions requisite to enable him to pass through it. The plan by examination, however, could hardly be adopted in the College of Physicians, because the studies and examinations undergone for the Associateship are already fixed so high. The only remaining plan, and certainly the best of all, (if the two classes of physicians are to be maintained,) is that by seniority, every Associate of a certain standing—say seven or ten years—claiming a right to admission to the Fellowship on attaining the fixed probationary limit, unless some tangible objection can be proved against him.

The following occur to us as the only objections of any force that can be urged against this plan:

1st. That an honour shared by so many, and alike open to all, men of talent and men of no talent, would cease to be regarded as an honour. Some force might be allowed to this argument if the practice which it purposes to supersede, was calculated to promote the honoring of desert alone, or was even likely to do so at all. But as we have no guarantee in past experience that this will be the case in future; and as, indeed, there is every reason to believe such would not be the case; we are bound to maintain that the argument derived from the obvious manifold evils necessarily flowing from the practice of *selection*, is all-powerful. But it is part of the plan advocated by us to leave a door open for the promotion of distinguished merit, even under the system of seniority. We admit that it would be a defect in the arrangement if there were no means of enabling the College to testify its sense of the value of great discoveries or of other important services rendered to science or humanity by its Associates: and we would therefore leave the power in the hands of the President and Council to confer the fellowship on a certain number—say two or three annually—who could not claim it on the ground of seniority.

2d. It may be urged, in the second place, that, according to the system of seniority, persons of disreputable moral character might occasionally find entrance to the fellowship. This danger, however, could be easily obviated in various ways. For instance, it might be arranged that in addition to the claim of seniority, every associate should be required to produce a certificate or recommendation, signed by a certain number of fellows, (as in the case of the Fellowship of the College of Surgeons,) to the effect that he is "a fit and proper person to be admitted to the fellowship." Or even a ballot might be instituted for every one as he attained the limit of seniority, the number of excluding balls being fixed at such a high proportion (say two thirds) as would prevent the effective operation of any mere prejudice or spite, and yet would effectually obstruct the admission of persons justly obnoxious.

3d. It may be urged that so very large a body as would be constituted by all the associates becoming fellows in their turn, would form a very bad medium for the transaction of business. To this we reply that, for the mere *discussion* of the affairs of any body of men, a large assembly is by no means either improper or inconvenient; and that for the *transaction* of what is more properly termed *business*, the College has the same medium as other large bodies, viz. its Council. It would be an easy matter to decide what subjects, whether for deliberation or execution, should be intrusted to the Council; and no one could object to all the *business* being transacted by it, so long as its members were chosen by the Fellows at large. In order to ensure a fitting executive of this kind, and, at the same time, to accord to seniority and experience their just due, all would agree to its being made a law of the corporation, that the members of the Council should be elected from Fellows of a certain standing, and the President from a still smaller number at the head of the list.

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* Cic. Orat. pro A. Cluent.

A College, constituted as is here proposed, would present an example of a real incorporation, and a just representation of one department of the profession; and while we see how easily, and at how little sacrifice the change could be effected, we cannot bring ourselves to believe that the College of Physicians will persist in what is understood to be their intention respecting the admission to the Fellowship.

### II. SURGEONS.

In treating of this class of the profession, our views are not restricted, as in the case of the physicians, by imperfect documents. We can here refer not merely to the general Bill but to the Charter and the Bye-laws of the particular College, all throwing light on each other, and together constituting the whole documentary evidence likely for some time to exist on the subject. From these we gather the following particulars,—few, indeed, but all that have reference to the subject of incorporation:

The College consists of two classes, Members and Fellows, both unlimited as to number, but differing materially as to rights and privileges.

Members. The documents give us but little information respecting members; they are, however, spoken of, both in the Charter and Bye-laws, as one of the constituent classes of the College. Nothing is said respecting the mode of their admission to the Collegiate honour, nor of the general privileges attaching to the membership. As, however, the new Charter confirms "all jurisdiction, powers, authorities, &c. as to the admission and expulsion of members," formerly possessed by the College, it is to be presumed that the regulations as to the attainment of the diploma, and also the common privileges thereby conferred, will be the same or similar to those now in force. It is generally understood—and we ourselves firmly believe—that that portion of the examination for the *Licentiateship*, which is to take place before the College of Surgeons, will be regarded as identical with that for the membership, the diploma being immediately thereafter attainable on the payment of a certain fee. No hint is given in the documents as to any corporate privileges attaching to the membership, except the very important one of its giving a claim to examination for the Fellowship, a certain number of years after the date of the diploma. The value of this privilege will be understood when we come to consider the privileges of Fellows. The future members will, of course, retain all the rights and privileges, such as they are, possessed by the present—such as free access to the library, museum, and theatre of the College, &c.

Fellows. According to the provisions of the Bill, no person can be registered as a "surgeon" unless he have attained the age of twenty-five, have applied himself to surgical studies during at least five years, and have passed an examination before one of the Royal Colleges of Surgeons. On being registered, he becomes, *ipso facto*, a Fellow of the College.

According to the Bye-laws, there are two ways of admission to the Fellowship, the one having no necessary connexion with previous membership or professional practice, the other having a necessary connexion with both.

1. By the first, any person who is twenty-five years of age; who is recommended by three Fellows as " a fit and proper person to be admitted to the Fellowship;" who can produce proofs that he has studied during certain prescribed terms at schools and hospitals, (a most ample curriculum;) " that he has attained a competent knowledge of the Greek, Latin, and French languages, and of the elements of mathematics"; " that he has served the office of House-surgeon or Dresser in a recognized hospital in the United Kingdom;" may present himself for examination for the Fellowship, and if he " shall be found qualified for the same," he shall receive his " Diploma of Fellowship." Candidates of this class may, or may not, have previously become " members" of the College.

2. The second medium of admission to the Fellowship is through the previous qualification as Member. It is recited in Clause 7, Sect. I, of the Bye-laws, " that any member shall, after the expiration of twelve years from the date of his diploma,* be admissible to examination for the Fellowship, upon the production of a certificate signed by three Fellows, to the effect, " that he has been twelve years in the practice of the profession of surgery; that he is a fit and proper person to be admitted a Fellow, if upon examination he shall be found qualified;" and also, " if he have not the degree of Bachelor of Arts, that he has a competent knowledge of the Greek, Latin, and French languages, and of the Elements of Mathematics." Upon passing the examination, as in the former case, the candidate will receive the Diploma of Fellowship, and be registered as a Surgeon.

As we have no means of knowing what curriculum of study may be required of candidates for the *membership* in the first instance, we cannot say to what precise extent this second mode of admission to the Fellowship is a special boon to the Member in regard to school or hospital attendance; but we take it for granted that the " twelve years' practice" is intended to stand as an equivalent for the " Dressership," and for certain other stringent conditions as to study, required of the junior class of candidates. We should also expect, as a reasonable concession to the acknowledged influence of time in dulling the vivacity of scholastic impressions, that the examination of this class of persons would be less stringent in matters of mere science, and more practical, than that of the other class.

The rights—certainly and probably—attaching to the Fellowship, show a considerable advance in the general views respecting medical incorporation, as well as an important augmentation of the dignity and professional privileges of the particular class of surgeons who are to be possessors of it. For the first time, since the institution of the College, a considerable body of its members,* under the name of Fellows, are entitled to meet in the Hall of the College, to elect their executive body and their own officers, by free ballot. They are themselves also eligible to fill any of the offices of the Corporation, under certain conditions.† It is to be presumed, also, that there exist the means of calling other meetings beside those for the election of the Council, at which Fellows may have an opportunity of discussing the affairs of the College or of the class of the profession to which they belong.

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* We notice this as the general rule. An exception is made in favour of those who have been members at the time of granting the Charter; they may go up for examination at the expiration of eight years.

As far, then, as regards the class of Surgeons called Fellows, there seems little to desire in the way of incorporation beyond what is conceded by the Bill and by the Charter; and if the whole profession consisted of two classes only, Physicians and Surgeons (in the restricted sense,) we should, for our own parts, after certain easy modifications of their bye-laws, be well enough contented with the organization of the Colleges. But it is impossible to consider this subject without going further, and inquiring how the interests of the largest and most important class of all, the General Practitioners, stand affected by the two forms of incorporation which we have been considering.

### III. GENERAL PRACTITIONERS.

It is of no practical use to investigate the causes of the division of the profession in this country into three classes, or to reason on its expediency or inexpediency; it suffices that it exists and must continue to exist. The only questions of real importance to be now considered are, (1) Whether the general interests, the honour, the happiness of the general practitioners, as a constituent body in the profession, are sufficiently conciliated by the arrangements of the established Corporations; and (2) If they should appear not to be so, how such a conciliation is to be effected.

No one will attempt to dispute the right of this body—forming nine-tenths at least of the whole profession—to have its interests considered, weighed, and adjusted. It may, indeed, be argued, whether that association and organization of its members, usually understood by the term Incorporation, is really essential to the best interests of the class of general practitioners. Much difference of opinion will exist on this point; but the difference, we apprehend, will be rather as to the meaning of terms and the amount of the thing sought for, than as to the expediency of the thing itself. It is contrary to all experience, and indeed in contradiction to the principles of human nature itself, that any large proportion of a body of men having such identical pursuits as the whole medical profession has, should sit down content under the privation of powers, privileges, honours, titles, (whatever they may be,) springing out of the very nature of these pursuits, while they see them exclusively attainable and exclusively enjoyed by a small fragment of their number. We say *exclusively attainable;* because men will reconcile themselves to any obstacle in the way of their ambition, provided they have the conviction that it is by possibility removeable, and free scope is left in the mind for the exercise of hope and the indulgence of rational expectation. And so it is with the general practitioners of England. Knowing themselves to be brothers and fellow-labourers in the same field with Physicians and Surgeons, they naturally expect that they should partake of the same fruits and enjoy the same or similar rewards,—at least in a degree bearing some proportion to the comparative dignity of their status and the value of their labours. If this expectation is not fulfilled, it is unreasonable to look for content among their ranks. That content is *not* found there at present, we have the testimony of the almost unanimous voice of this part of the profession, proclaiming aloud from one end of the kingdom to the other,—not merely that their actual condition must be changed, but that their prospective condition, shadowed forth in the Government Bill and the College Charters, is equally unsatisfactory.

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* The present number of Fellows is upwards of 500.

† Some of the regulations respecting the election of the Council, as laid down in the Charter, are so manifestly bad, that they will require to be changed. Our business, at present, is to consider principles not details.

One of their loudest calls is for *Incorporation.* Incorporation they see exists, and is prized in the other classes of their profession; it confers peculiar rights and privileges on the incorporated members; it matters not a whit whether these are of any real value, it is enough that they are the object of desire: if the path that leads to them is barred against a class that claims participation in them as a right, that class, as a matter of course, is discontented and unhappy. But the justest cry for justice may be unreasonably exalted by passion. Let us, therefore, while conceding to the general practitioner his undoubted right to share in the privileges of Incorporation, examine with calmness and impartiality his true position, present and prospective, in regard to this privilege, and then decide, according to the best of our judgment, how his wrongs, if found to exist, may be best redressed.

It is scarcely necessary to remark that the present anomalous position of the general practitioner in regard to incorporation, arises from the fact, that the medical profession, in this country, has finally resolved itself into three departments, while the corporations formed previously to the tripartite division, have still remained but two.*

The members of the new third estate of the medical kingdom, the general practitioners, combining as they do, in their own persons, the functions of the members of both corporations, might naturally seek alliance with either, in their desire for incorporation. But association with the physicians was, speaking generally, impossible, from the want of an University degree. They therefore joined the incorporation of surgeons, and, under the name of Members of the College, have continued, until the present time, associated with them, at least in name. But, as might be expected, this union, legally voluntary yet conventionally compulsory, proved anything but satisfactory to the general practitioners; and their long discontent and loud claims for something more than a mere nominal alliance, have mainly brought about the state of things leading to the changes in the medical constitution, effected or projected, now under consideration.

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* In making this statement we purposely diregard the Apothecaries' Company, because it has no claim whatever to be considered as a medium of incorporation for the general practitioner. It had none of the fundamental principles requisite to entitle it to be so considered, and it never was so considered by its members.

The sudden cry recently raised in favour of this body, must have surprised the Worshipful Company fully as much as it has surprised everybody else. And yet the cry was natural, though strangely misdirected. The just terror of the impending blow from Sir James's non-restriction clause has somewhat disturbed the judgment of the general practitioner. To escape from the Quacks he would take refuge in Apothecaries' Hall, just as a man pursued by a mad bull would jump into a horsepond. But surely neither the one nor the other would select such a resting-place in cool blood.

According to our representation of the privileges of the Associates and Fellows of the Colleges of Physicians and Surgeons, it cannot be denied that both these societies afford, or may easily be brought to afford, tolerably fair examples of incorporation, as far as regards their own members. And as they are composed of men avowedly belonging to those orders of the profession most regarded by the world, affiliation with their ranks ought to be generally satisfactory. Doubtless it would be so to the general practitioners, provided it could be attained on anything like equal terms, or on terms not derogatory to their standing as gentlemen and men of education; and provided it presented the essential quality of being *attainable by all.* In theory, no doubt, this is the case; but many of the conditions are of such a nature that though it may be *possible* for all to accept them, it is more than improbable that all will ever do so.

Although we have already stated these conditions we will repeat them here; and we will also repeat our opinion that, however inadequate they may be considered by general practitioners, they are, in truth, boons to their order in the way of incorporation, altogether new, and the only substantial boons in this respect they have ever received.

1. All persons having passed as licentiates of medicine and surgery, may immediately become members of the College of Surgeons on paying a small fee for the diploma. They will then possess every privilege in respect to the College which they now possess. They will be MEMBERS OF THE ROYAL COLLEGE OF SURGEONS, and may put "SURGEON" on their cards and on their doors as heretofore, although they cannot appear in the Register under this title.* Twelve years after the date of their diploma as member, they may claim to be examined for the Fellowship, and on passing the examination and paying the fees, will be registered as "SURGEON," and be constituted FELLOWS OF THE COLLEGE OF SURGEONS with all the privileges. Now, if the examination is such a one as may reasonably be expected to be passed by men who have been twelve years absent from the schools, but who have not foregone their private studies, it cannot be maintained that the access to corporate privileges is excessively and unreasonably difficult. According to the Bill, the Fellowship may be thus attained at the age of 33, a period of life which cannot be regarded as unreasonably advanced, for a man to wait for, ere he can acquire official distinction. If we could believe that the arrangement would be regarded generally in this point of view, and that all or even a large majority of the Licentiates of medicine and surgery, would become members with the purpose of eventually becoming Fellows, we should feel that a good deal was done towards effecting a tolerable incorporation of this class of the profession. The arrangement would, at least, produce a result of the greatest possible value to the public at large, that of ensuring a highly-educated and highly-qualified class of general practitioners. This is a result of such paramount importance, that no effort should be spared to bring it about. And we earnestly entreat the Council of the College of Surgeons to reconsider those of their bye-laws which have reference to the admission

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* Persons who were members of the college at the time of passing the Bill, could claim to be registered as surgeons.

of Fellows, with a view to rendering them less stringent than they are. We are far from proposing that they should be rendered so lax as that any risk should be run of seriously deteriorating the qualifications of the Fellows; but surely some further concession might be made to the claims of men who, since their retirement from the schools, have been actively engaged in the practice of their profession. We think it would be far from unreasonable that the Member who could adduce evidence that he had been actively engaged in practice since the date of his diploma, might be allowed to present himself for examination after *eight* years, instead of twelve, provided he was not less than thirty years of age; and if the requirement of a "competent knowledge of Greek" were abandoned in his case, we do not think that either the interests of the public or the dignity of the Fellowship would materially suffer. Were the Board of Health in existence, and we had access to the ear of its members, we would venture to suggest a veto on the bye-laws that went beyond the point now indicated.

2. Although not formally stated in the Bill, it is implied that the College of Physicians shall, in future, have the power of conferring the degree of M.D. on any practitioner who "shall have attained the age of forty years, and shall have been examined by the Royal College," and such graduate "shall be entitled to be registered by the Council as a Physician." This regulation has been made with the express object of enabling general practitioners—who have not, in early life, had the opportunity of taking an University degree, but who, from circumstances, may be extremely well qualified to practise as physicians, and are desirous of doing so—to join the incorporation of Physicians. It is a medium of which we need not doubt that many will avail themselves, since we have always seen the ranks of the physicians plentifully supplied with most respectable members from this source under the old system, when University degrees were more easily attainable—or, at least, when they were more valid—than they will be in future. Still, it must be admitted, that the proportion of Licentiates who will seek this form of incorporation will be very small; and when the advanced period of life at which it is available is considered, it can, in fairness, be regarded less in the light of a corporate privilege conferred on the body of general practitioners than as a graceful means of benefiting and honouring individual members. Nevertheless, it is but just to consider it as a door, however small, whereby access to corporate rights is, for the first time, legally attainable by this class of the profession.

We have now stated everything in the way of incorporation which the Bill and the Charters provide for the class of general practitioners. Although the provisions are much more liberal than before, and although we believe them to be considerably greater and more comprehensive than has been generally admitted in the late discussions on the Bill, we must admit that they fall very far short of the measure of a complete or fair incorporation. A small number will enroll themselves as Associates or Fellows of the College of Physicians; a large number will join the College of Surgeons as Fellows; yet, we believe, that the majority will still remain as general practitioners, either as Licentiates simply, or as Licentiates and Members of the College of Surgeons. Even of those who join the College of Surgeons as Fellows, a certain proportion will feel that a considerable number of their new colleagues, and all the members of the executive and ruling body, have some interests and some sympathies more or less apart from their own, and probably some prejudices directed towards themselves and their branch of the profession. They will know and feel, also, that so long as they attach themselves to their own branch of the profession, they cannot attain any of the higher offices or honours in the corporation.

These and other considerations, which could easily be adduced, prove plainly enough to us that the incorporation of the Licentiates with the College of Surgeons is, to say the least, defective in many essential particulars. The source of the defects is equally clear: it is that which we stated at the beginning of this section—the attempt to reconcile the tripartite state of the profession of the present day with the bipartite arrangements of its pristine condition. In one word, the College of Surgeons is a College for Surgery and Surgeons; while the General Practitioners are neither physicians nor surgeons, or rather are both, and require allocation in an institution possessing, as a fundamental element, this double professional character. We do not wish to disguise our opinion that more might have been done by the old establishments to meet the altered state of things; but, we believe, that an arrangement calculated to meet the wants of the whole profession could only have been effected by a complete reorganization of the Colleges. And although we are far from thinking this undesirable or even impracticable,—if the Colleges could be induced to take an enlarged view of their own interests and the interests of the profession generally,—we do not feel ourselves called upon to discuss matters which can have no practical issue at the present time. The actual question before us is the incorporation of the general practitioners, under existing circumstances.

After much consideration, we have come to the conclusion that it will be for the benefit of the profession generally, that, in addition to the existing medical corporations, a third should be established for the class of general practitioners. In advocating such a measure, however, we are influenced by a very different spirit from that which seems to have suggested the same idea to other writers and speakers on the subject. Our object is to unite the different classes of the profession more closely together, not to separate them. We wish all who agree with us in thinking that medicine is one and indivisible, would also agree with us in endeavouring to make its professors equally united.

Objecting as we do, for reasons detailed in a preceding section of this paper, to the enjoyment by the Colleges of Physicians and Surgeons, of any direct participation in the government of the profession as a body, or to the exercise by them of any authority in testing the qualifications of Licentiates, it may be supposed that we would be far from according such powers to the new incorporation. In our view of the case, the rights, privileges, and duties of a medical college or incorporation, should have exclusive reference to its own members, as members of the incorporation, not as members of the medical body at large. The profession, as a body, must be constituted, governed and regulated by the State, or by an authority created for this purpose by the State; in the present case by the Council of Health and Education. It will be quite enough for a College to govern and regulate itself in its corporate capacity, and to superintend the scientific establishments which must always form an essential and important part of its constitution.

Founded and chartered on these principles, we think that a new College, under the name of "THE ROYAL COLLEGE OF MEDICINE AND SURGERY," or under any other appropriate designation, would, as we have already said, be a decided benefit to the class of general practitioners, and to the profession generally. We have not here space, nor is it our province, to enter into particulars respecting these benefits, or respecting the organization of the new institution. Many of its benefits are, indeed, too obvious to require illustration; they are almost all comprised in the very term incorporation. Such a College, would of course, as the acknowledged representative, head, or, if we may so speak, impersonation of the class, stand in the same relation to its own members and the government, as the other incorporations do. It would have a right to be consulted by the Board of Health on the interests of its members, and it would have a right to lay its views, its wishes, its opinions, its grievances, in like manner, before the governing body. It was entirely from the want of some such institution as this, that in the constitution of the Council of Health as proposed in the Bill, no members belonging to the class of general practitioners were nominated. The omission was not an intentional oversight, but the necessary result of the non-existence of any body representative of the class in question.

The proposed College would be no less useful in what may be called its intrinsic influence, or in its relations to its own members. By its Bye-laws it could regulate many important particulars as to professional proceedings, which are now left entirely to the discretion of individuals, to the manifest injury of the professional character. Having the power of excluding and detruding as well as of admitting members, on fixed conditions, it would form a court of appeal in all cases of doubt or difficulty, and would be a tribunal to judge and adjudicate in matters which, though beyond the pale of the laws of the land, might yet be of vital importance to the character of individuals or of the profession.*

An important feature of the College would, of course, be its scientific and literary department. It must possess a house, at least, with a library and theatre. A museum would hardly be required while the Hunterian was still incomplete; or, if founded, it would be as a succedaneum to this magnificent national collection. Our views as to the future relations of the old colleges with the new, would be sadly disappointed, if there existed between them any other than a friendly spirit of mutual accommodation and generous rivalry in scientific progress. The new College would have its scientific as well as its business meetings; and in organizing the literary and scientific part of the scheme, it would be an easy task to afford facilities for carrying its labours in this direction beyond what has been hitherto effected by the old Colleges. So long as it was governed by the proper spirit, it could not fail to advance the best interests of medical science at the same time that it conciliated those of its individual members.

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* As an illustration of what might be done in this way, we may here notice two cases —one of *exclusion*, one of *detrusion*— which might fairly come within the jurisdiction of the College, although not amenable to the law of the land. 1. Every one admits that the vendors of secret remedies, and advertising quacks are a dishonour to any incorporation: it might be a rule of the new College tha any of its members or fellows, proved to be such, should be instantly struck off the list. 2. Many are of opinion that it is very desirable to discountenance the keeping of open shops for the sale of drugs, &c., after the fashion of chemists, as a practice derogatory to the character of general practitioners: it might be made a rule, that the proprietors of such shops should not be admissible as members of the College.—We know very well that such exclusion or detrusion by the College could not entirely suppress the practices complained of; but there can be no doubt that it would have a great moral effect in putting an end to them, provided the College preserved such a character as made affiliation with it an honour, and consequently an object of desire.

The constitution of such an institution would of course be framed on a liberal basis, and its government be thoroughly representative. But, we trust, that its founders would guard against the danger of making it too democratical. We would suggest that every Licentiate should be immediately admissible as MEMBER without ballot, on the payment of a small entrance fee; that he should continue as MEMBER for five years, with enjoyment of all the other rights and privileges, except that of voting or of being eligible to office. At the end of five years, the members should have the right, from seniority alone, to claim to be admitted as FELLOWS under restrictions similar to those we have proposed in the case of the College of Physicians, (p. 206.) Another small fee should be paid for the Fellowship which would of course entitle its holders to the highest privileges of the College.

According to our views, then, as above detailed, the proper organization or incorporation of the profession in England would be as follows:

I. A general Governing Board (THE COUNCIL OF HEALTH AND MEDICAL EDUCATION), having the exclusive regulation of the education, mode of examination, registration, and licensing of medical practitioners of every class.

II. AN EXAMINATION BOARD, appointed by the Council of Health and unconnected with the Colleges, for testing the qualifications of candidates for the license to practise. No one to be permitted to enter the profession without being examined by this Board, and obtaining from it Letters testimonial to the Council of Health, authorizing the granting of the License to practise as a Licentiate of Medicine and Surgery; and no one, not possessing this License, to have any legal right to practise in any department of the profession.

III. A College of Medicine and Surgery for the [voluntary] incorporation of Licentiates of Medicine and Surgery, to be instituted by Royal charter under the name of THE ROYAL COLLEGE OF MEDICINE AND SURGERY, with power to frame laws for the admission of its members (MEMBERS and FELLOWS), for the government of its affairs, electing officers, &c. &c.

IV. A College of Surgery (THE ROYAL COLLEGE OF SURGEONS OF ENGLAND), with power to frame laws for the admission of its members (MEMBERS and FELLOWS), &c. &c.

V. A College of Medicine (THE ROYAL COLLEGE OF PHYSICIANS OF ENGLAND), with power to frame laws for the admission of its members, (ASSOCIATES AND FELLOWS), &c. &c.

## VI. *Of the Bill, in relation to the Representation of the Profession.*

It will be understood from all that we have now stated on the subject of Incorporation, that we consider this, if properly carried out, as comprehending all that is needed in the way of Representation. It must not from this be imagined that we disavow the principle of Representation as one that ought to belong to the medical profession; on the contrary, we maintain that it is an essential principle in every arrangement devised for its organization and government. The only difference, we think, that can exist on this subject among men of understanding and liberal views, regards the amount of this representation and the manner in which it is to be carried out. It must exist somewhere. Our opinion is very decided that it ought to exist in the Colleges or Incorporations; but if it is not allowed to exist there, it must find a place elsewhere. We are quite clear, however, that the Council of Health and Education, as proposed to be established by the Bill, ought *not* to be a body representative of the profession. Its duties are very different from those properly belonging to a representative body. It has the mixed functions of a judicial and executive body. It ought not to represent the profession; but it ought to be, and must be a court open to the representations of the profession. It must be authorized and obliged to consider and to decide upon every question of importance brought before it by authorities acknowledged by the profession: it will have to carry into effect every measure concerning the profession which, either by direct legislation or by legal inference, comes fairly within its jurisdiction.

With the single exception of Dr. Davies, no one of the numerous writers and still more numerous speakers on this subject, seems to us to have taken the proper view of the question. Convinced as they all properly are of the necessity of representation, they have all, in our judgment, made a mistake as to its true character and proper allocation. Having been so long accustomed to see Colleges and Representation disconnected, they seem to have imagined the two things to be incompatible, or, at least, practically unsusceptible of union. And this view of the case has doubtless been greatly strengthened by the fact of a similar view having been taken and propounded by government. The Council of Health, as proposed to be constituted by the Bill, is a rude attempt at representation. But if attempted to be so carried out, the plan must prove a complete failure. It proposes to combine incompatibilities. By it the profession would be badly governed and worse represented. By cheating with the semblance it would divert attention from the substance. The only true and useful representation, of which the medical profession is susceptible, is corporate representation, representation within the Colleges. Dr. Davies's remarks on this point are strictly in accordance with our own views:

> "A difference of opinion," he says, "may arise respecting the composition of the 'Council.' It has been urged, that the superintending council ought to be elected by the members of the profession at large; or, as the expression has been, that 'the profession ought to be allowed to govern itself.' Now, in determining this point, we ought to take into consideration the object of the Council, and see what analogy there may be traced between it and any part of our national representative sys-

tem. It appears from the Bill, that the main object [one of the main objects] of the Council is to compel the different colleges to do their duty; in other words, to see that the education, the examination, and the fees required by the different colleges, shall be *uniform*, as far as uniformity can be carried into effect. From this it follows that the Council is intended to be more of an *executive* than of a *legislative* character; and, from analogy, it may be compared more to the *ministerial* than to the legislative department of the state.................. ......

"Admitting that the elective machinery might work well in the interior economy of the different *colleges*, it does not follow that it would answer the purpose equally well in its application to a *superintending Council* of Education. The principle may apply to the colleges, because they generally possess certain property, which belongs, or is supposed to belong, to the members in common; so that, according to the principle of representation, they ought all to have a voice, indirectly, in the management of the corporation; whereas the Council, under Sir James Graham's Bill, is not intended to hold any property, but is to be paid (if paid at all) by the Lords of the Treasury, who are of course answerable to *Parliament* for their acts." (pp. 70-1.)

All that seems to us necessary for the constitution of such a fair and free representation of the profession as ought to satisfy men of liberal yet practical minds, is comprehended in the following simple arrangements:

1. Such an incorporation of the profession in the colleges as we have above proposed.
2. The right of the incorporations to lay their representations before the Board of Health, either by written petition or remonstrance, or by deputation.
3. The assurance that the representations made are attended to by the Council.

This last most important condition is admirably secured by one of the clauses of the Bill, which, though unostentatiously introduced, is one of the most valuable in it. It is this:

"Be it enacted, that minutes of the proceedings at all meetings of the Council shall be drawn up and fairly entered in books, to be kept for the purpose; and such minutes shall be at all seasonable times open to the inspection of any person appointed for the purpose of inspecting them by any of the said universities and colleges." (§ 12.)

With the power to discuss their particular affairs, as well as what concerns the profession generally, openly and by corporate authority, in the colleges; with the right to lay the result of their discussions before the Council of Health; and with the check on the proceedings of the Council supplied by the admirable clause quoted—a clause which subjects the whole conduct of the Councillors to the control of public opinion—the profession need have no fear as to the administration of their affairs being conducted in accordance with the expressed wishes of the members at large.

## VII. *Of the Bill in relation to the Government of the Profession.—The Council of Health and Medical Education.*

For the first time in this country, an attempt is to be made through the instrumentality of this Bill, to govern the Medical profession on rational principles, or indeed to govern it at all;—for the partial and contradictory rule of the Colleges, heretofore alone prevalent, cannot be regarded as government, in the ordinary sense of the word; or if government, certainly of the kind which the poet tells us prevails where—

> "the ancestors of Nature hold
> Eternal anarchy, amidst the noise
> Of endless wars, and by confusion stand:
> . . . . . . . . Chaos umpire sits,
> And by decision more embroils the fray
> By which he reigns."

It is hardly befitting language to speak of the *importance* of such a measure; its vital *necessity* is so palpable. The profession had long reached such a condition of confusion and misrule, that its regulation was imperative. The measure proposed in the Bill to effect this purpose, is, in principle, precisely such as would naturally suggest itself to every sensible person accustomed to the institutions of a free country. The entire government and supervision of the profession is to devolve on a Council composed chiefly of medical men, and presided over by one of the principal Secretaries of state. Although the only duties of the Council that concern us at present, or, indeed, that are mentioned in the Bill, are those relating to the government of the profession, it is, no doubt, intended that this body should also perform duties of an entirely different, though not of a less important kind;—those, namely, which have reference to the Public Health. Hence its double title—THE COUNCIL OF HEALTH AND MEDICAL EDUCATION.

It is evidently, and very properly, intended that the Council should have complete control over everything relating to medical education and the qualification of Candidates for the license to practise,—as far, at least, as the unrepealed laws affecting the Universities, Colleges, and Corporations will permit. Many of its duties and powers are specified in the Bill: others are only implied. The following are most of those specified:

1. To superintend the Registration of medical practitioners, and publish a Register of their names.
2. To grant Licenses for Practice on receiving Letters testimonial from the Examining Boards.
3. To regulate the scheme of medical education and fees in the different schools, and render them, as far as practicable, uniform.
4. To have the *veto* on all Bye-laws of the Colleges of Physicians and Surgeons.
5. To enforce the Registration of medical students at the different schools.
6. To settle differences among examining bodies, as to the place, time, or mode of examining; to demand particulars of the examinations; to send their secretary or a member to attend at the examinations; and to refuse the testimonials of bodies whose regulations are deemed insufficient.
7. To specify the institutions which shall be considered *public*, in relation to the appointment of medical officers; and to specify the form of the testimonials required of candidates for such appointments.*

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* The power conferred by the last clause (7) will require restriction. We think the right to nominate as officers of hospitals, members ef *any* of the *three* colleges, cannot be taken away from the Governors. But we believe the *result* would still be the same; —the members of the most esteemed class would be preferred as at present.

We fain hope that to the duties of the Council mentioned above, we shall be able to add the following, among others, before the Bill finally passes the House of Commons:

8. To fix the precise amount of preliminary education, which shall qualify for registration as a medical student.
9. To elect the Examiners of the General Examination Board.
10. To institute legal proceedings against persons for practising without a license.

It is manifest, we think, that a body having to perform duties of this nature ought not, as we have already stated, to be a representative body. That it ought to contain among its members individuals thoroughly acquainted with the condition, habits, feelings, wants, wishes, of every class of practitioners in every part of the empire, no one will dispute; and in this sense, it ought certainly to be representative: but this is a very different thing from what is commonly understood by representation, and which has been so loudly and almost unanimously contended for by the writers and public speakers during the discussions which have taken place since the promulgation of the Bill. In these discussions it has been generally maintained that the different incorporations and classes of practitioners should have the exclusive right of selecting and electing certain members from their own body, who should specially represent them and advocate their particular interests in the Council. We think this is a great mistake; and, we believe, that a body formed on such principles would partake more of the character of the Miltonic council quoted in the beginning of this section, than of a calm, deliberative, judicial, executive, impartial, practical board, such as is required for the regulation of a scientific profession. This false view, if not suggested by the government scheme for constituting the Council, has been unquestionably greatly strengthened by it; and, we fear, it will be no easy matter now to convince the profession that they are mistaken.

We may give here one illustration of the evils likely to result from making the Council representative. A complete third of the members is to be furnished by the Colleges of Physicians and Surgeons (3 each); and if the principle of representation is adopted, it is impossible to deny the right of the general practitioners, when incorporated in one or more colleges, to send an equal number at least (3); one half the Council would thus consist of deputies of the colleges, and, doubtless, members of the college councils. Now it is one of the most important duties of the Council of Health to examine and approve of the bye-laws of the colleges, or to put a *veto* on their enaction; and one half of its members—by a thousand accidents converted into a majority—would thus have to decide in the Council of Health on the very laws they themselves had helped to enact, and which, as honest *representatives*, they must now support. It is quite needless to do more than hint at the enormous evils such a species of legislation might lead to. Even with colleges thoroughly representative, it would be singular if the profession at large did not suffer; with the colleges as they exist at present, and as it is at least probable they may exist in future, the interests of the profession would inevitably be sacrificed to the fancied rights and interests of the corporations. No doubt, the clashing of interests of the two or three classes represented might tend to prevent the aggrandisement of any one. But would not this very *clashing* tend, also, to produce either a barren neutrality of action or a corrupt compromise of rights?

Looking, then, to what we conceive to be the proper character of the council and the nature of the duties it will be called on to perform, we are of opinion that its members ought to be chosen by the crown. That the great majority of these members should be medical, and that they should be chosen indifferently from all classes of the profession—physicians, surgeons, general practitioners—we strenuously maintain; but we maintain also, that the grounds on which they should be chosen are not that they are advocates and zealous partisans of their respective classes—nor even that they must necessarily belong to those classes at all—but that they are men of honour, men of judgment, men of sense, men of experience, men of business,—well acquainted, of course, with the special interests of each different department, but regarding these only as forming a part of the interests of the whole profession of which they are the protectors.

We wish we had the power to prevail on Sir James Graham to take this view of the subject, and, disregarding the unwise clamours of the profession on this point, to appoint the members of the council at his own discretion and on his own responsibility. *But before even we consider him as justified in so doing, he must previously have interposed his authority to make the existing colleges more representative, and have obtained from Her Majesty a charter of incorporation for the general practitioners, based on the most liberal principles.*

We are well aware that many objections have been urged against the expediency of allowing even a portion of the members of the Council of Health to be chosen by the crown; and we are prepared to find our proposition of having the whole so chosen, encountered with a proportionate opposition. After considering these objections with what care we may, we retain our opinion in favour of the government nomination. We do not mean to say that the objections are without foundation, or that the patronage of the crown will be always well bestowed; we merely wish to be understood as stating, that there are difficulties and dangers on both sides, and that we are of opinion that they will be found less numerous and less strong in the case of direct nomination by government than in the case of selection by the colleges and universities. An intermediate plan, however, would equally meet our views, and might obviate some of the objections adverted to. The colleges might be required to return lists of persons deemed by them most fit for councillors (say double or treble the number to be appointed), out of which the minister must make his selection.

The force of the objection founded on the argument that the nomination by the crown annihilates the principle of representation and self-government, so eagerly contended for by the profession, is satisfactorily met, in our opinion, by the counter-arguments, formerly adduced, (1) that such representation and self-government ought to exist, and must exist, in the colleges; and (2) that the proper functions of the Council of Health are incompatible with the existence of such a principle in its formation.

The only other argument of any weight against our view, is one that applies to all government appointments whatever,—the risk that men will be appointed not on account of their fitness for the office, but from other considerations of a political or private nature. We do not deny the chance of this risk. We even believe that it would occasionally be incurred. But are we sure that the choice would always be good if the profession, through the Colleges, had the patronage in their own hands?

We are far from being disposed, on general principles, to enhance the patronage of the crown at the expense of the people; but we confess we should be sorry, for the sake of the people themselves, to see the nomination to public offices transferred from the hands of a minister responsible to the people through Parliament, to the hands of the people themselves, or even to the House of Commons, their organ. And if this holds good with regard to all the other public Boards, and almost all public functionaries, we really cannot see why the Board for the government of the medical profession, should be made an exception. In this case as in the others, we believe that the publicity of the proceedings, and the force of public opinion manifested through its organ the press,—to say nothing of the sense of duty in the mind of the minister—sharpened, it might be, by his consciousness of responsibility to Parliament—would lead, as a general rule, to good appointments. Under any circumstances, it is impossible to believe that so many of them would be bad as seriously to vitiate the efficiency of the Council. And when it is further recollected that the profession, through its organs the corporate bodies, will possess the right to demand the attention of the Council to their representations, and that the Bill gives, in the clause formerly quoted, a direct means of ascertaining publicly, whether these representations have been attended to,—it appears to us that no real grounds exist for apprehending any danger from such a constitution and such an institution of the Council as we are advocating.

But, independently of the question of quasi-representation adopted in the constitution of the Council, as given in the Bill, we think the plan of its formation, as there detailed, is defective in several other respects.

The Council, as everybody knows, is proposed to be composed of eighteen members, viz.

1 President, a Secretary of State: *ex officio.*
5 Regius Professors of five Universities (3 physicians, 2 surgeons): *ex officio.*
3 Physicians: chosen by the Colleges of Physicians.
3 Surgeons: chosen by the Colleges of Surgeons.
6 Other members: chosen by the Government.

The following are some obvious defects involved in this arrangement:

1. If it is meant that all the work is to be done in one place, the Council is much too large for a good working body, and for the duties it will have to perform.

2. It is ill constituted, in respect of the usual places of residence and ordinary duties of its members. Nine of its members reside at a great distance from London; so that regularity of attendance at its meetings would be impracticable on this account alone. Moreover, it is probable that, independently of distance, they would be engaged in other duties which would frequently interfere with their attendance: five, at least, out of the nine, would certainly be in this predicament during one half of the year.

3. Even on the principle of representation, and, indeed, on any principle, the proportion of members given to England is much too small. Of the eleven ex officio and college members, Scotland sends as many as England (4), and Ireland only one less (3); while the actual number of medical men in England is more than five times as great as in Scotland, and more than four times as great as in Ireland.

Strong objections have been urged against the presence of laymen in the Council, but we think on very insufficient grounds. So far from such persons being obstructive to the proper administration of medical affairs, we believe that they would materially promote it. Besides, it seems but fair that, in a matter which concerns the public so vitally, they should have some guarantee that the members of the profession should not have it all their own way. Here we think a sort of representation is very necessary. Class legislation is to be avoided in all cases; and the public have a right to place a check on the class tendencies of the professors of medicine. A strong case in point, in favour of this view of the subject, exists in the Board of Admiralty. It is composed of sea-lords and lay-lords (all appointed by the crown); and it is generally understood that the civil phlegm of the latter is found, on many occasions, to be a most beneficial counterpoise to the professional impetuosity of the former; John Bull being thereby occasionally stinted, no doubt, in the number of his ships, and eke mulcted of his martial glories, yet not without the somewhat satisfactory though very vulgar compensation of feeling his money in his pockets.

### VIII. *Of the Bill in relation to the Professional Privileges and Protection of Medical Practitioners.*

The special privileges and the kinds of protection afforded to the profession by the proposed Bill are chiefly the following:

1. All legally qualified practitioners, as already stated, are to be officially registered, and the register published annually.
2. None but registered persons can hold any public employment, whether in military or civil life.
3. Registered persons shall alone be regarded by the law as medical practitioners, and can alone perform acts required by law to be performed by such,—as the giving of certificates, for instance.
4. Registered persons alone shall be exempt from serving on juries, inquests, &c.
5. Registered persons can alone prosecute and recover payment for medical attendance.
6. Unregistered persons acting in a public capacity as medical practitioners, shall be fined £20 for each offence.
7. Unregistered persons pretending to be registered, or taking the name of Physician, Surgeon, or Licentiate, shall be punished by fine and imprisonment.

These privileges on the one hand, and penalties on the other, are more or less new boons conferred on the medical profession. Taken altogether, they confer upon all its legitimate members a definite and distinctive character in the social body which they did not possess before. By them a broad line is drawn, for the first time, between qualified and unqualified practitioners; between those who, if not certainly learned and skilful, must have been all, at least, trained to medical knowledge and skill, and those who may not have been so trained, and who in all probability will not have been so trained.

These privileges and penalties, it is admitted, would of themselves, suffice to establish the social and professional position of licensed medical practitioners, regarded as individuals, on high grounds; but it is contended that, without some additional aid, they would entirely fail, (1) to secure to them their legitimate rights as members of a learned body recognized by the state; (2) to preserve to the medical profession, considered as a whole, that high and honorable character which ought to belong to it; and (3) to afford to the public at large, any sufficient guarantee that all those permitted by the State to treat their diseases, possess the requisite amount of knowledge and skill.

If, in addition to the excellent enactments quoted, there had been one more, limiting the right of treating diseases in *private houses* as well as in public institutions, to registered practitioners; nothing more could have been desired on the score of protection or privilege. But, without some such clause as this, all the others become comparatively useless; and, under their sole operation, the state of the profession would be, in many respects, in a decidedly worse condition than before.

The grand evil to be apprehended from the want of any restrictive clause in regard to private practice, is, the introduction into the ranks of medical practitioners of a *great number* of men very imperfectly educated, or not educated at all. A few ignorant intruders, here and there, could not materially injure the profession as a body, or make serious inroads on the health of the public at large. But the incapacity of a *large proportion* of the professors of the medical art, must inevitably—and most disastrously—affect the whole profession and the whole community.

The abolition by the present Bill, of the Apothecaries' Act of 1815, which made it unlawful for any person to practise as an apothecary in any part of England or Wales, unless he were licensed by the Court of Examiners, without there being any positive and direct prohibition substituted in its place, leaves the practice of medicine and surgery open to any one who chooses to disregard the indirect penalties imposed by the Bill on those who practise without being licensed. Whoever is unseduced by the flattering prospect of being physician or surgeon to an hospital, dispensary, or workhouse, and is not deterred by the apprehension of having to serve on juries and inquests, or by the incapacity to write a medical certificate on some official occasion, may, without let or hindrance, practise any and every department of medicine and surgery; provided he does not put on his door, or publicly assume, the title of Physician, Surgeon, or Licentiate, and is satisfied with what he can obtain from his patients without suing them in a court of law, for the payment of his bills.

In reference to this most important part of the new Bill, the points of greatest consequence to be considered are the following: *first*, the probability or improbability that persons will enter into private practice, without being licensed; and, if this is thought probable, the extent to which such unlicensed practice is likely to prevail; *secondly*, the nature and degree of evil to the profession and the public, likely to flow from such a state of things; *thirdly*, whether at all, and to what extent the profession and the public have a claim on government to be protected against such evils; and, *lastly*, if so, how this protection can be best obtained.

I. The following considerations, among others, lead us to believe that under the provisions of the present Bill, if carried into a law, the practice of medicine and surgery by unlicensed persons would prevail, and prevail to an extent that would seriously injure the profession and the public.

1. It is well known to all who have had long experience in the profession, more especially in provincial towns and rural districts, that the prohibitory clause of the Apothecaries' Act has had, and continues to have, a powerful effect in preventing and suppressing unlicensed practice. Although rarely put in force, the knowledge that it can be put in force, at any time, and the dread that it may be put in force in any individual case, have a power over intending and actual defaulters, which is notorious. Even the very consciousness of proceeding to act contrary to law, where no special application of it may be expected, operates as a powerful preventive in cases of this kind. In London and four or five other large cities, where the vast amount of population prevents all the members of the professional body from being acquainted with one another, and where it is seldom known or cared for, how or where individual practitioners obtain their living; a man of a bold temperament, and whose conscience is not over sensitive to legal obligations, may very possibly for a long time "drive a handsome business," without possessing any legal qualification. But this cannot be the case in the country, where every one is known to every one, and every one's practice is known, and where the loss of a patient by one practitioner is the gain—and *known* gain—of a patient by another. Here, any drowsy fear of legal consequences, or any little callousness of conscience, on the part of the intruder, is marvellously stimulated by the vivacity of self-interest and the feeling of rivalry on the part of one's neighbours. The consequence is, that the attempted resting-place of the provincial interloper is, generally, to use the vulgar phrase, *made too hot for him*, and he soon ceases altogether in the land, or sets himself down in some remote village, where he starves, without material injury to his qualified brethren—whatever may be the consequence to the lieges. But it is the known existence and possible operation of a restrictive law, in such cases, that supply the whole power by which the suppression of the unqualified practice is effected. If no such law existed, it cannot for a moment be doubted, by men of experience, that a large proportion of such persons would retain the position they had assumed as practitioners.

2. We feel assured that it is a great mistake on the part of the framers of the Bill to believe that the indirect and negative penalties provided by the Bill, would alone prevent, in a very material degree, such persons from practising. We are sorry to be obliged to confess that such a belief assumes the existence of a higher degree of honorable ambition, of just pride, and of a becoming sense of the dignity of the medical office, than

exists among the class of persons who would be likely to take advantage of the laches of the law in question.

3. The following are some of the sources whence the abundant supply of irregular practitioners might be fairly expected to flow:

A. *Imperfectly educated medical men from British schools.* It is well known that of the great body of men who frequent the London schools, there is always a considerable number who, from one cause or other, fail to obtain the license of the Apothecaries' Company or the diploma of the College of Surgeons. Even in the present state of the law, a small proportion of these inchoate doctors contrive to worm themselves into practice, under one plea or another: some under the false pretence of being really licensed, some from ignorance of the truth on the part of their neighbours, and others from their good nature or contempt. It is maintained that not a small but a large proportion of such persons would get into practice under the sanction of the new Bill. The class of persons now under consideration contains several genera, which it may be expedient to notice.

*a.* A certain proportion of students, who have commenced their studies with the intention of completing them, and who have prosecuted them with zeal and success, are compelled, from the failure of pecuniary means, to terminate them, at a more or less advanced period, and seek for the means of livelihood within or without the boundaries of the medical profession. Those among them who had been enabled to pursue their studies for a considerable period, and who had thereby attained a fair degree of professional knowledge, seldom leave the profession altogether. Some open shops as chemists, and practise "over the counter;" some venture to practise as general practitioners; but the majority endeavour to get employment as dispensing or visiting assistants to general practitioners. It is a fact well known to the profession, that this class constitutes a large body in England, and contains within its ranks many well-informed and excellent men. Many, however, as may be supposed, are very unfit to be intrusted with medical practice on their own responsibility. It may be fairly presumed that the whole of this class of men, the good and the bad, the well-informed and ignorant, would, sooner or later, become candidates for practice, under the operation of the new Bill.

*b.* A second class, and one, it is to be feared, much more numerous than the preceding, would be made up of those idle and dissipated young men, who, after having spent the full amount of time in the medical schools, are rejected by the examining boards for want of sufficient knowledge. From an authentic table in the Apothecaries' statement, it appears that during the twenty-seven years, extending from 1815 to 1842 inclusive, 11,414 persons presented themselves for examination by the Court of Examiners, and of this number 1502 were rejected. Taking the whole period of twenty-seven years, we have thus an annual average of 55½ rejections; while the average of the last ten years is 76—the increase, no doubt, arising from the increased strictness of the examinations. It is fair to assume that a very considerable number of students of the same class did not present themselves for examination at all, through consciousness of certain rejection awaiting them.

Under the operation of the new law, when it is to be presumed that the examinations would be still more strict, we have a right to expect a still greater number of such failures, and consequently (we assert) a proportionate supply of candidates to swell the ranks of unregistered practitioners. It would surely be according much more to such characters than they have a right to claim, were we to believe that any large number of them would hesitate to commence practice without any license, if they might do so; more especially when it is considered that the pecuniary resources of many of them would not allow them to continue their studies longer, even if they wished to do so.

*c.* A third class of students, we may well believe, encouraged by the example of the two former, would soon spring up, who would frequent the medical schools for a short time, in order to obtain such a smattering of knowledge as might justify to their own tender consciences the attempt to practise, and who would never seek or purpose to seek for an examination of any kind.

*d.* And we think it extremely probable that yet a fourth class of students would be called into existence, who would find schools and teachers, and examinations and titles, more suited to their humble resources and less lofty ambition; and who, after passing a voluntary apprenticeship with their unlicensed fathers or friends, would spend a winter or two in London and return home to treat the lieges, with some new-invented diploma in their pocket, and bearing some obsolete or some modern title which could be displayed on doors and in surgeries, in defiance of section 31 of the new Bill. Need any one doubt, who has known the London grinding system for thirty years, that there would be found men ready and willing to testify to all the world that such students—their pupils—were not only fully qualified to exercise every branch of the profession, but that they were vastly superior to the men who had the legal license and figured on the official register? And would it not be reasonably expected from the pupils and protegees of such persons, that in their localities as "*Doctors*" or "*Surgeon Apothecaries*," they would vaunt themselves in the same strain? And if they did, would it be at all wonderful if a large portion of the public believed them?

A never-failing impulse to the manufacture of the practitioners referred to in the last two paragraphs, would be supplied by the occasional great success of some one of the number, which could not fail to operate on the minds of many parents whose means were insufficient to give their sons an expensive education.

B. *Foreign graduates.* The foreign market also would, doubtless, be called into requisition, as at present, but in a much greater ratio, to furnish its quota to the corps of the unlicensed. Some of the more ambitious youths who could afford it, would go over to Germany, and, after a few months, return with the degree of M.D. in their pocket, from Erlangen or Giessen; while the humbler-minded and the poor would transmit their Testimonials from Dr. M'Crammim and Mr. Grindstone, and their twenty guineas, to the agent in London, and would be dubbed Doctors by the same Universities, by return of post. This class would recruit the ranks both of the general practitioner and the physician, and might be reasonably computed to supply a very considerable number annually. Every one knows that such is the case at present; and it would be indeed strange if the supply were less when the demand was greater.

C. *Druggists.* The last stream which we shall here notice as tributary to the great river of empiricism, would have its source in the druggists' shops: and a mighty fine stream (as our friend Dr. Patrick says) would be that same. We believe that within its own channel it would be equal to all the others put together. This hardly needs any illustration; as all who consider the subject, must see at once that such a result is inevitable, if medical practice is left without any legal restriction. Every one knows that a vast number of druggists, even at present, prescribe and practise extensively in their own shops. Many even visit patients at the patients' houses; and it is impossible to doubt that it is the fear of the law and the consciousness of being jealously watched by the licensed practitioners, that prevent them practising much more extensively. If their practice were legalized, as it would be by Sir James Graham's Bill, the whole body of druggists, we verily believe, would rise, en masse, into the ranks of medical practitioners. And assuredly we could not much blame them for so doing. It would be unreasonable to expect that tradesmen should resist a temptation which led so directly and so safely to their own interests; and if the consciousness of incapacity, from want of the proper knowledge, deterred some, it would be an easy matter to find a flattering unction to heal such tender consciences. Within these few years past, thanks to that excellent institution, the Pharmaceutical Society, druggists have received a better and more expensive education in their own proper line. It would be an easy and a natural advance, for such men, under the sanction of the new Bill, to add a course of anatomy and a course of medicine to their pharmaceutical studies; and equally easy, thereupon, to declare themselves ready and willing—over the counter and behind the counter, at home and abroad—to treat all and sundry of her Majesty's lieges who chose to seek their cheap assistance. We should, in a word, have an exact reproduction of the history of the old apothecary developed into a general practitioner; and we feel confident that, before two years should elapse from the passing of the Bill, we should have half the chemists' shops in the kingdom labelled "Chemist and Apothecary," or "Pharmaceutist and Apothecary," instead of "Chemist and Druggist," as at present.

II. We think it impossible, after the exposition now given, to entertain any doubt that, under the Bill as it now stands, the profession would be overrun by an immense number of men altogether unfitted for the practice of medicine and surgery. And it needs no consideration to satisfy every rational mind, that such a state of things would be an enormous evil to the medical profession, and no less a misfortune to the public at large. This proposition is so self-evident, that it would be waste of time to establish it further. It suffices to say, that, in such a state of things, not only the character and standing, but the actual knowledge and usefulness of the whole profession would be lowered and degraded; and the injury to the health of the community would be proportionate to the deterioration of knowledge and skill:

> "How," says Mr. Carter, "is the profession to meet with public confidence, if medical men be not distinguished *as a body* for their knowledge and acquirements? If registered and unregistered are to be permitted alike to practise, the *medical character* will be deteriorated. The blunders, ignorance, and miscon-

duct of the unqualified portion will be charged to the *mass:* they will leaven the whole lump. The public will become timid and distrustful of medicine and medical men. Learning and capital will be diverted into other channels."*

III. Although it is almost self-evident that the profession and the public ought to be protected, as far as possible, from the influence of such evils as we have been contemplating, it may not be amiss to make one or two remarks on the subject:

1. The profession seem to have a claim on government for protection against such unlicensed intruders, on the following among other grounds:

*a.* In compliance with the requisitions of the state, as laid down in this very Bill, the members will have to devote many years to the study of their profession, to expend much money, and to undergo strict examinations to test their competency.

*b.* They will have paid considerable fees in order to obtain the license to practise, and to have their names registered as qualified practitioners.

*c.* The privileges exclusively secured to them, in return for such sacrifices—viz. the capability of being appointed to hospitals and other public offices,—are totally incommensurate, so long as the field of private practice is left equally open to those who have made no such sacrifices.

*d.* The members of other professions and the followers of other occupations, who have been obliged to attain a certain amount of knowledge in them—as lawyers, pilots, &c.—are protected against the inroads of the unlicensed; and some sort of protection has been almost universally deemed necessary, by those who have followed any given pursuit, for the sake of distinguishing the competent from the incompetent, and securing a due reward to competency. The national feeling is, and for centuries has been, in favour of the principle of such protection—a point not to be lightly disregarded.

2. The public has a claim on government to be supplied with a body of well-educated medical practitioners, and to be protected against ignorant pretenders to medical skill, on the ground, (*a*) that the practice of medicine concerns directly the health and lives of the community at large, and (*b*) because the community is incapable of judging of the fitness or unfitness of persons to exercise it. It may be said that the public registry of the names of legitimate practitioners supplies the public with the means of judging on this point: but to this it is replied that the practical commentary on the law furnished by the permitted practice of the unregistered, is sufficient to counterbalance the effect of the registry, especially among the great body of the people, who are not likely to know aught of registration or registers. It is no greater interference with the liberty of the subject to say—'Here is a large body of medical practitioners, qualified and licensed to heal disease, choose whichever one among them you please to attend yourself or your family in sickness, but choose not a person neither qualified nor licensed'—than it is to restrict the choice of a client in a suit at law, to the class of attorneys, or a

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* Letter to the Secretary of the North of England Medical Association.

captain of a ship, to the class of licensed pilots; and yet no one thinks it would be well to permit unlimited choice as to the individuals who should undertake legal causes, or navigate ships into port. When the welfare of the public demands it, individual liberty of choice and personal freedom of action must alike give way; were it not so, civilization must retrograde, and political liberty itself be extinguished.

> "When the liberty of the subject," as Mr. Carter well observes, "threatens to be dangerous to himself, or detrimental to his family or society, it must be restricted. To be consistent, Sir James Graham should not interfere with gambling. Why should people not be permitted to indulge their propensity to be cheated in pocket as well as in health and life? Would the consequences be less injurious to themselves and those who depend on them in the former than in the latter case?"*

IV. Before quitting this part of our subject, it is necessary to notice more particularly, one objection to the restrictive measures we advocate, which has been advanced by many good and enlightened men, and which, we are ready to admit, has always appeared to us to be the only one adduced by the advocates of unrestricted practice, which had any semblance of weight. It is this,—that the limitation of medical practice to men so highly and so expensively educated as the registered class under this Bill will be, would deprive the lowest class of the community—the labouring poor—of the means of obtaining medical relief at all. It is argued that medical practitioners of so high a grade would disdain the scanty offerings of the poor for their learned services, and that this most important class of the community would, in consequence, be neglected in their sickness. It is too true, that even now, the labouring classes in this country are unable to remunerate medical men for their services; how then, it is naturally asked, shall they be able to do so, when a more expensive education warrants, and a more thoroughly exclusive system of practice permits, higher remuneration for services rendered at the bedside of the sick? Is it not the bounden duty of the State to take care that even the risk of such a terrible evil should not be incurred? Is it not better that the whole race of doctors should be ruined, than that such a cruel wrong as this should be perpetrated?

These are most momentous considerations; but we think it can be shown that the course of proceeding we are advocating is far from being inconsistent with their just appreciation.

A. In the first place, we would say, that if the present social and political condition of the people is such as to render it impracticable for the labourer to obtain good advice for himself and family when ill, it is the bounden duty of the state to remove this impracticability.

B. Secondly, we maintain that it would be monstrous if the State were deliberately to meet this difficulty *by lowering the value of the article*, i.e. by supplying the poor with *bad advice* from ill-educated men, and not by raising the ability of the claimant to obtain good.

C. If medical advice were a *mere luxury*, like fine clothes, delicate food, carriages, &c., the State might justly say,—Let a man obtain it of the quality he can afford, or go without it; but it is assumed as an axiom that it is *the positive duty* of a State, to take every necessary precaution to preserve the health and life of its subjects; and it is evident that *good medical advice*, in this point of view, comes as much into the category of *necessaries* which the State is bound to place within the reach of all, as food, clothing, housing, &c.

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* Letter to the Secretary of the North of England Medical Association.

D. It is maintained, therefore, (C) that it is the duty of a government, in the first instance, not only to provide the public with good medical advice, but even to keep *bad* advice out of their reach, as far as this is practicable; and it follows as a corollary (A) that if the actual arrangements of a State prevent any class of its subjects from obtaining this *necessary*, *these arrangements ought to be changed.*

E. But, even supposing the social and political condition of the poor to remain as at present, and the education and attainments of the general practitioner to be raised by the new Bill—Does it certainly follow that the professional relations between the two will be less advantageous to the former than they are at present? This seems at least doubtful, for the following reasons:

*a.* The present rate of medical charges for attendance on the poor is as high as can well be obtained; therefore the most expensively educated men could get no more, even if they desired it.

*b.* But it is believed that the better the education of practitioners, the more enlightened would be their views, and the more humane their feelings; and that, consequently, taking a truer and kinder view of the actual condition of their poorer brethren, they would be found *cheaper doctors* than even their predecessors had been.*

*c.* The same superiority of intellectual culture would lead to the increased countenance and promotion of the system of *medical clubs* and self-supporting dispensaries, on improved principles; the unhappy opposition to which, by the medical profession, has been mainly the result of ignorance.

*d.* Under any circumstances, (though this alternative we strongly deprecate,) the poor will have the same resource as now, viz. *the chemists' shops*, as we do not believe that what is called *counter-practice* can be prevented by law.

*e.* The more expensive education, under the new system, would diminish the number of persons entering the profession; the members of the profession would, therefore, have a larger sum to be divided amongst them, and could afford to practise at a cheaper rate. For instance, in a certain country district, one licentiate and his family would have to be maintained in place of two; and having double the number of patients, he could afford to charge *the poor*, at least, much less than if his patients were fewer.

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* The present practice of the profession corroborates this view of the case. We never see the well-educated and respectable general practitioner oppressing the poor. It is only the unlicensed, uneducated, and disreputable practitioner, who makes heavy charges, and then sues the poor man for payment. The almost invariable practice of respectable general practitioners is to attend the really poor gratuitously, or to see them taken care of in a public institution.

*f.* The apprehension of any place, even the poorest country district, being left without a sufficient medical staff to attend to all the sick, seems altogether groundless. The demand will always create a supply in this as in every other case. Need we seek further evidence of this truth than the notorious fact, that, at this very time, hundreds of Doctors of Medicine are acting as assistants to general practitioners, as surgeons of unions, and as village apothecaries!

V. Having thus, as we think, demonstrated the necessity of protection, it remains to inquire what should be the precise nature and amount of it.

The views of medical men differ a good deal on this point; but it appears to us that the general opinion is in favour of too severe restriction. No one contends that all the forms and colours of unqualified practice, comprehended under the general name of quackery, should be put down, simply because every one admits that this is impossible; but there is a prevalent feeling that the legal restraints should be extended wider than seems easily practicable, or is required by the just vindication of the rights of the qualified by education and law. It seems to us altogether unreasonable that the chemist should be restrained from "prescribing over the counter," as it is called, so far as to be deprived of the power of giving his drugs, simple or compounded, to poor or rich who may call for them, even although he select the medicine, and fix its dose. And if we allow this privilege to the chemist, it seems somewhat difficult to prevent the professed quack from selling his specifics in his own house. For our own parts, although we are fully aware of the amount of evil perpetrated by the race of advertising quacks, both within and without the profession, and although abhorring the cold, calculating robbers and poisoners of the ignorant and confiding, as among the basest of the human race, we do not at present see how these vermin can be effectually exterminated. If any means can be suggested for effecting so desirable a result, without trenching too much on the liberty of the subject, and without endangering the passing of the Bill, we shall embrace them with delight and gratitude. At present, however,—looking at the same time to what will be a reasonable and fair though not a complete protection to the profession, and what will be likely to meet the sanction of the legislature,—we are disposed to urge upon our brethren to be content with the introduction of a clause into the Bill, rendering it penal for all unregistered practitioners *to visit patients at the patients' own houses or at the houses of others.* Such a prohibition, though it would not reach the advertising quacks in their domestic dens, would effectually prevent the introduction of any *large number* of unqualified men into the ranks of the profession. With the exception of London, and a few of the larger cities, no other place could supply the means of livelihood to men forbidden to practise beyond their own threshold. The profession, consequently, as a body, could not be materially injured; and the public could only suffer in that fraction of its mass which now ministers to the cupidity of the public empiric. It is to be remembered, that it is not the class of society that most wants protection, the poor labouring class, who are the prey of these medical arachnidans. They spread their webs only for those who are fat and well-liking, and can bleed; and if the profession generally are not jostled by them, and the poor are safe from their fangs, it may be not unreasonable and possibly may be politic, to leave them for the solace and the patronage of those whose intellectual caliber makes them congenial dupes, and whose worldly means harmonize with their desires.*

## Art. XIX.

*On the Remedial Influence of Oxygen or Vital Air, Nitrous Oxyde, and other Gases, Electricity, and Galvanism, in restoring the healthy functions of the principal Organs of the Body and the Nerves supplying the Respiratory, Digestive, and Muscular Systems.* By J. Evans Riadore, m.d. f.l.s. &c.—*London*, 1845. 8vo, pp. 178.

This is another specimen, by the same author, of a class of books which we have always exposed and condemned—books written for the public under the professional cover, and written, we shall not say designedly and purposely to attract ignorant patients to the doors of their authors, but, most assuredly, written as cleverly as if this had been the express object of their composition. Liebig's theories are now the rage, and attracting the attention of the whole reading public, learned and unlearned. It was therefore very natural for one of the class of writers we have at present in view, to endeavour

> "To share the triumph and partake the gale,"

by hooking on his miserable dirty little shallop to the stern of the magnificent bark now so proudly careering "the waves of glory."

> "Professor Liebig's works on organic chemistry," writes Dr. Riadore, in his own lucid style, "have introduced a new *therapeutical branch* to the profession; and, consequently, increased a desire for a more intimate acquaintance with animal chemistry and its practical application, to correspond with the more philosophical method now adopted in investigating diseased conditions of the living system. I have endeavoured to apply, concisely, Liebig's theories," &c. (Pref. p. i.)

Nor was this a matter of mere choice; our modest author was really *forced* to make his patients inhale "oxygen *or vital air*." How could a man of science and feeling do otherwise?

> "Most of the patients," says Dr. Riadore, "*who were induced to consult me* THROUGH MY LATE WORK, had their maladies in the chronic form, having consulted, in many instances, some of the most eminent practitioners of the day, [a very unhandsome proceeding, by the way, on the part of the patients, to make our learned author the *pis-aller* of London,] and, consequently, I found it would be more than useless to pursue the ordinary mode of treatment. I, therefore, had recourse to untried means," &c. (Pref. p. vii.)

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* The Bill contains several omissions which we hope may be supplied in Committee. We will only advert, at present, to two, and this merely to indicate them, not to discuss them. The first is the omission of all reference to the regulation of the Chemist and Druggist. We think the Board of Health should be empowered to establish a special examination Board for this class, and that no one should be allowed, after a specified time, to open shop, as druggist, without a license obtainable after passing an examination. We think the Pharmaceutical Society might supply the basis and mechanism of such a Board. The second omission relates to the education and licensing of Midwives.

And it is to the exposition of these *untried* means, so kindly announced in its very explicit title-page, that this volume is devoted. This sort of title-page, by the way, will save us and other reviewers much trouble, as it contains nearly everything that the book contains or was intended to contain, and in more intelligible language than that of the volume itself. Intelligibility is not our author's *forte* certainly, though we are far from thinking that unintelligibility is his *foible ;* because we have a shrewd suspicion that the *ignotum pro magnifico* is the very kind of fare best suited for the palate of intended readers.

Of course, all obstinate diseases vanish under the battery of the new armamentarium of Harley-street—and, among these, of course, all such little ailments as consumption, and asthma, and sterility, and deafness, and blindness, &c. Sterility and its congeners are very favorite subjects with the author. Besides numerous incidental notices, we have one whole chapter on "disorders of the generative functions,"—a filthy subject filthily treated ; and we are soon to have a whole work on this precious theme from our philanthropic author. "I shall shortly publish," he says, "my experience, in a distinct treatise, on spermatorrhea, or involuntary emission, and other *defective functions* of the generative organs." What boundless blessings to the unhappy may be expected from a whole "distinct treatise," devoted to their service, when we have many such beatific revelations as the following, even in a single chapter:

> "Gentlemen who live generously, and leading a sedentary life, are continually met with, complaining of heated skin, clammy white tongue, headach, acrid eructations, oppressed breathing, fickleness, irritability, or considerable despondency, amounting to a desire to seek death, with disinclination to all mental or physical occupation, and *with a very low degree, and even sometimes absence of animal passion.* Females are similarly affected, and this state is attended with considerable derangement of the uterine functions, or a *total loss of the generative function, or power of conception ;* some fancy that they hear in their sleep, or even while awake, heavenly music, or a diabolical conversation, or recommendations, in a whisper, to destroy themselves. Patients of the above description are generally only functionally and not organically affected, and are capable of *being quickly either cured or greatly benefited,* by inhalation of oxygen, and the use of galvanism, and other simple remedies, and a judicious diet." (p. 74.)
>
> "I have administered the oxygen in cases of sterility, with the utmost advantage. In cases of leucorrhea, which had resisted the usual remedial means, I have also found inhalation of the oxygen of much advantage, and believe that few of these cases may not be cured in the absence of organic causes, by oxygen, galvanism, and tonic medicines containing iron and ammonia. Two ladies, after having been married five and seven years, without having, I believe, ever conceived, although, as usual, they said they had several mishaps, became patients of mine, in consequence of intolerable sufferings from dysmenorrhea, and were not only cured by oxygen and electricity, but actually became pregnant, and gave birth to fine children, and one of the patients is again pregnant." (pp. 81-2.)

Consumption, as we have said, is also one of the favorite objects and one of the glorious monuments of the new treatment.

> "From very extensive trials, for some years past, I am fully satisfied that some cases of consumption are remediable, and often curable, by inhalation of some of the gases, that would inevitably prove fatal by depending upon administering medicines by the stomach, according to the usual system." (p. 99.)

In the first of the cases given to show "the benign effect of the inhalation of oxygen," we are indebted to our learned author for some important novelties in physiology, pathology, and practice. "The animal heat," we are told was at first 100; "in four days was reduced to 98," and subsequently it was reduced "to its *natural standard*, 97?" !!

Asthma naturally follows consumption: "Asthma, depending upon functional derangements, will generally be removed or alleviated by inhalation of oxygen a few times." (p. 103.) Even stricture of the urethra cannot withstand the doctor's aerial battery: "In a case of spasmodic stricture of the urethra, I have used the nitrous oxyde gas with success." (p. 118.)

*Deafness.* "A gentleman consulted me respecting deafness, more particularly of the left ear, which followed a severe cold succeeding the measles. He had tried a great many means, usually adopted by aurists, without any benefit. I was induced to try the nitrous oxyde gas; and. under its first influence, he considered it improved his hearing. *I recommended him to come to me every day*, and I galvanised his ears in the usual way one day and administered the nitrous oxyde gas the following day. Thus, with a little alterative medicine, he was cured in six weeks, and continues well in every respect. This gentleman having suffered so long, and having a large circle of acquaintances, he recommended several deaf patients to consult me, and I *have pursued the same plan in all the cases that I regarded as dependent upon deficient nervous energy*, WITH THE UTMOST SATISFACTION." (pp. 119-20.)

We entertain no doubt whatever of "the satisfaction" derived from this *plan*. Is it not extremely satisfactory to see one's friends come to one "every day"—more especially, as our learned author would say, "dona ferentes?"

*Blindness.* "I can assure the members of *my profession*, [of course, no one else!] that the function of the optic nerves may be restored by a simple alterative course of medicine, and by inhalation of nitrous oxyde gas, and by electro-stimulation, after all the usual remedial means have been tried unsuccessfully." (p. 121.)

In a case of blindness from iritis, the result was, of course, happy:

"When I first saw this patient he could only see the waving of a hand or the reflection of a bright object. The vitreous humour was of a greenish colour, and the eye apparently fixed as it were upon vacuity. Both eyes were irritable, his general health was bad, and he felt very desponding. All these symptoms are now, however, *a matter of history*, [!!] and he is able to perform his duties as a clergyman." (pp. 122-3.)

But, as the author says "it would be useless to relate various cases of deafness and of blindness, arising from defective nervous energy of the respective nerves of the ear and eye, for in truth, the success attending the means have been most generally singularly gratifying," (p. 123;) so we must, however reluctantly, here terminate our very imperfect account of the mighty marvels contained in this book, which will justly entitle its author to an elevated rank among the curers of the incurable.

But before laying down our pen, we must add a word or two in a graver strain. In dissecting, for the instruction of our readers, such disgusting *subjects* as that whereof we have just interred the remains, we have, it is true, the satisfaction to know and feel that we have discharged a public duty. But, alas, we cannot flatter ourselves with the hope that we have thereby destroyed the infection wherewith they were imbued, so long as there remains a venal non-medical press to scatter it among the lieges. We do not doubt, that before the page we are now writing shall see the light, the very book we have here denounced will be lauded to the skies in some of our daily and weekly newspapers. In our Number for July last, we gave a notice of some books by an author of this class —a notice which we defy any one to prove unjust—remarking of them that "they prove the total incapacity of the author to write his mother tongue, and justify the inference that his scientific knowledge bears some proportion to his literary proficiency." And, then, we see, in a most influential daily paper, a review of one of the very same books, in the following strain:

> "The design of the scientific author of this Treatise is obvious, and merits commendation. By describing in popular language subjects which have been too generally veiled, by technical and scientific phraseology, from those most interested in a knowledge of their character and consequences, Dr. —— has conferred a great benefit on the more delicate and retiring sex. For obvious reasons we cannot here enter into details. Our meaning must be rather implied than explained. But, without trespassing beyond our due limits, we may advise that this practical compendium—the result of Dr.——'s extensive observation and experience during a long course of practice as a physician—be possessed by every female and especially by every mother. Its clear and carefully-explained symptoms—a mistake respecting which is often attended by dangerous and even fatal results—and an attention to the salutary cautions and directions it furnishes, will prevent much anxiety, and lead to the recovery of health, even when the sufferer and her friends were anticipating protracted sickness, if not a fatal termination."

Can any of our readers inform us by whom such articles are written, and by what means their insertion in respectable newspapers is procured?

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## Art. XX.

*The Principles and Practice of Obstetric Medicine and Surgery, in reference to the Process of Parturition; with* 110 *Illustrations on Steel and Wood.* By F. H. Ramsbotham, m.d., Fellow of the Royal College of Physicians, &c. &c.—*London*, 1844. 8vo, pp. 756.

This new edition of Dr. Ramsbotham's valuable work forms one of the most complete and thoroughly useful treatises on midwifery with which we are acquainted. It is not a mere reprint of the first edition, but contains an original essay occupying nearly a hundred pages on the diseases of the pregnant and puerperal states. Dr. Ramsbotham's remarks on these subjects, though necessarily brief, display the same talent for observation and the same practical tact as were shown in the first edition of the work; of which a rather full notice appeared in this Journal for Oct. 1841. The entire treatise has undergone a careful revision, and a few additions have been made to it; but the supplementary essay contains the only new matter of any importance. The chapters on Puerperal mania, Puerperal fever, Hidrosis and Scarlet fever, contain many extremely valuable observations. The chapter on Hidrosis is particularly interesting and we regret extremely to be obliged to omit, for want of room, a long extract from it which we had transcribed for the printer. We must, however, recommend Dr. Ramsbotham's excellent account of this rather rare disease, to the special notice of the reader.

The amount of mischief discovered after death in cases when this disease has run to a fatal termination is far less than is met with in other forms of puerperal disease in which symptoms of a much more alarming character have existed. Dr. Blundell professed himself to be wholly unable to give any account of the morbid appearances to which it gives rise, and though Dr. Ramsbotham has had the opportunity of making several post-mortem examinations, he has never found traces of disease anywhere except in the lining membrane or within the veins of the uterus. But as he truly observes, by no means every case of uterine phlebitis has been attended by symptoms of hidrosis. For our own part we should be disposed to look upon hidrosis not as a specific malady, but as one of the many varieties of morbid action consequent on a diseased state of the circulating fluid. Dr. Ramsbotham seems inclined to reject this hypothesis as applied to that large class of diseases included under the generic term of puerperal fever; and consequently treats of hysteritis, peritonitis, acute tympanitis, and of a fever allied to typhus, and of hidrosis, almost as if they were essentially different affections. He expresses himself as dissatisfied with the term puerperal fever, since he conceives that its use leads the young practititioner to confound together, both in description and in treatment, very dissimilar diseases. It does not, however, appear to us, that anything would be gained by discarding the term puerperal fever, which we regard as distinctive of a disease peculiar to lying-in women, attended by various local lesions, but always associated with febrile disturbance. Inflammation of the womb or the peritoneum in a lying-in woman does not of necessity imply the existence of puerperal fever, and the fever may run a fatal course and yet leave behind it no local lesion such as our modes of investigation are at present able to detect. No hypothesis seems to us so likely to unravel many of the abstruser questions of medical science, as one the foundation of which shall be laid in a well-understood humoral pathology. This opinion, too, seems further substantiated by the fact that the histories of most epidemics of puerperal fever, contain accounts of cases closely resembling hidrosis. Many such for instance occurred in the Dublin epidemic in the year 1810, and in 1836 at the lying-in hospital of Vienna. But we must not wander into these inquiries.

Dr. Ramsbotham's notice of the typhoid fever which sometimes occurs in puerperal women contains a striking illustration of the evils of treating a disease according to its name, and without proper attention to the peculiarities of its symptoms. He was summoned to see the wife of a medical friend who lived a short distance from town; she having been seized with typhus fever on the day after a perfectly natural labour. Her husband designated the disease puerperal fever, and acting upon preconceived notions was very desirous of bleeding her; but to this Dr. Ramsbotham was opposed, and stated it to be his opinion that the loss of a few ounces of blood would irrecoverably depress her. A small number of leeches were applied to the temples, and a purgative wasgiven, which was followed by the expulsion of a large quantity of fæces, and soon succeeded by great relief. The next day, however, an old practitioner, who was a relative of the patient's husband, was called in, and pronouncing the disease to be puerperal fever, expressed his surprise at Dr. Ramsbotham's remissness in not having bled her. He placed her in the half recumbent posture and bled her; but before six ounces of blood were drawn, she fainted, and died within four or five hours after the bleeding, never having rallied from the impression first produced. This fever was highly contagious, and having been communicated to three other patients, all of whom were bled by the medical practitioners who attended them, death in each instance occurred a few hours after the bleeding. The evil of the depletory treatment having been now fully recognized, no more patients were depleted, and no more deaths took place.

The extreme peril attendant on scarlatina in puerperal women is very forcibly dwelt on by the author, who states that out of a very considerable number of persons whom he has known to be attacked by it, only two recovered. There is indeed a peculiar malignancy about the disease when lying-in women become its subjects which is almost unaccountable. A striking instance of this, not mentioned by Dr. Ramsbotham, was afforded during the prevalence of scarlatina at Vienna in 1799 and 1800. The epidemic was characterized by its extreme mildness, except when it attacked puerperal women, who both in the lying-in hospital and out of it were carried off in large numbers on the fifth or sixth day. So fatal was it in the hospital, that the number of deaths rose from 9 to 49 in the course of the year. In the event of scarlatina occurring in the family of a person who is within one or two months of her confinement, Dr. Ramsbotham insists on her immediate removal from all communication with the infected parties, and on the continuance of this separation till at least a month after delivery. The author's experience has, we think, led him somewhat to overrate the fatality of scarlatina; there can, however, be no doubt that its attack exposes the pregnant or puerperal woman to great peril; and that even so strict a separation as he recommends cannot be regarded as a superfluous caution.

The chapters on abortion, and on the diseases of pregnancy, contain much very valuable information; but we have already given specimens of the work sufficient to justify our hearty recommendation of it as one of the best guides that the student or young practitioner can follow.

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## Art. XXI.

*Miscellaneous Contributions to Pathology and Therapeutics, being a series of Original and Practical Papers on Rickets, Hydrocephalus, Impotence, and Sterility, Pulmonary Apoplexy, and Hemoptysis.* By J. R. Smyth, m.d.—*London*, 1844. 8vo, pp. 342.

This volume is a collection of papers on the subjects set forth in the title-page, many of which have appeared before in weekly medical journals. Cases are given and commented upon. The first contribution is in rickets which contains no practical matter of any worth. The practice recommended is judicious, but has been laid down more clearly and concisely by most systematic authors. The author speculates on a connexion between rickets and disease of the liver, but gives no dissections to prove it. The next paper is chronic hydrocephalus. One case is detailed in which the writer resorted to tapping with temporary amendment, but the child ultimately died. After Dr. Watson's masterly analysis of this operation in his 'Lectures on the Practice of Physic,' these crude and half-digested remarks seem especially useless. The existence of a cerebral murmur in hydrocephalic affections of children. This is asserted was first noticed by Dr. Fisher of Boston, whose observations were given in the Thirteenth Number of this 'Review,' in January 1839, page 268. The existence of this sound Dr. Smyth became aware of before he had read Dr. Fisher's paper. He gives an analysis of an essay by Dr. Whitney, published in the 'American Journal of the Medical Sciences,' for October last, in which it is asserted that a murmur or bellows' sound is audible in the head, in congestion, inflammation, compression, and organic diseases in the brain, in hydrocephalus, ossification of the arteries, and excessive general anæmia. A case by Dr. Whitney is given in which aneurism of the basilar artery gave a purring vibratory thrill, heard over the whole cranium.

The next contributions are on impotence and sterility, in which the important relation between the mental well-being of the individual, and a healthy state of the organs of reproduction, and the connexion between abuses of their function, and the failure both of bodily and of mental health, are strongly insisted on. It seems to be the impression of Dr. Smyth and of similar writers that the want of written essays on this subject by men of reputation, is a proof that the facts are not duly recognized. But is this the case? Can any man of ordinary observation be unaware of this fruitful source of mischief? Is not the silence rather a proof that even in this country those whose minds are cultivated and refined by education rather shrink from committing to paper their whole views on a subject which they cannot unveil without doing violence to their best feelings and to their own self-respect? They are content to indicate and allude to such causes in a way which no one who reflects duly, can pass over or misunderstand, and they seem with one accord to leave to pamphleteering quacks the dirty work of revealing in print the private confessions of the most humiliating weaknesses and vices of human nature. For your quack has no such difficulties. It is not that he sees further; but no decency, shame, or compunction, hinders him from exposing all of his most secret surmises and suspicions, or the most secret revelations of his patients; and, led by the joint influence of his own pruriency and love of gain, he concocts his sealed volume, or cunning advertisement, to catch and to delude those whose weaknesses he is so well aware of. The difference between the two lies in the mode in which the subject is treated. The man of true science and taste treats an uncleanly and impure subject with brevity and purity. The quack never recollects that "want of decency is want of sense." The difference is as great as exists between one man who should throw the light of a lamp upon a dung-heap to indicate its presence, and another who, not content with this, should also stir it up and enjoy its reeking vapours.

Without putting the present in this last class, we regret that he approaches it too nearly either for the dignity of science, or for his own reputation. For, like the pamphleteers, he reprints long and disgusting letters full of minute confessions, with hypochondriacal twaddle, and weak flattery of the doctor, which such patients indulge in; and there is throughout a fulness and prolixity of uncleanliness, which men of good taste, to say no more, eschew.

The letters of one patient, a medical person, we regret to say, exhibit a callous viciousness indicating a most degraded moral condition, and they are printed without a word of comment! Nor is the mode of treatment sufficiently new to excuse either the mode in which the subject is treated, or the reprint of these papers which have been previously circulated in a weekly journal. The treatment of the cases given is judicious. They are treated with ordinary remedies according to the individual symptoms of each—in fact just as all judicious practitioners do treat diseases—one with alteratives, others with iron and tonics, &c.

The style of the whole volume is loose, verbose, and discursive, "that easy writing which is such hard reading."

## PART SECOND.

# Bibliographical Notices.

Art. I.—*Researches and Observations on the Causes of Scrofulous Diseases.* By J. G. Lugol, Physician to the Hospital St. Louis, &c. *Translated from the French, with an Introduction, and an Essay on the Treatment of the principal varieties of Scrofula.* By W. H. Ranking, m.d. Cantab, Physician to the Suffolk General Hospital.—*London*, 1844. 8vo, pp. 306.

We gave so full an analysis of the original work of M. Lugol, in our last Number, that any reference to its contents or general character, would be here quite out of place. We feel it, however, due to the translator to say a few words respecting the treatise in its present form.

Although the impression conveyed by our former judgment of M. Lugol's book, must have been, on the whole, unfavorable, we would here explain, that our verdict was as much influenced by what the author had failed to do as by what he had done in regard to matters of fact and science; and as much by his unphilosophical mode of conducting the inquiry, as by the actual matter contained in the volume itself. We did not and do not think the book absolutely but only relatively bad. We thought and think that a much better book might have been written by one possessed of the author's great experience, or by the author himself if he had been better disciplined in inductive philosophy. But still we thought and think that,—whether viewed abstractedly as a mere book medical, or relatively as one among the hundreds annually published,—it must be regarded as far above par in actual value. It was, therefore, with much satisfaction that we learned that it was being translated; and it is with still greater satisfaction we are now enabled to announce that it has been admirably translated. The style bears none of the external marks of a translation, and reads as the original composition of a scholar and a man of taste.

The translator has prefixed an Introduction of some thirty pages, and has appended an essay on Treatment, extending to nearly a hundred. Both these are extremely well written, and will be perused both with pleasure and advantage by the English student. In conclusion, we heartily commend this volume to the notice of our readers. Whatever opinion they may have formed of the original work, they may depend on finding the present version, at least, better than its prototype,—thus, in itself, showing the reversal of a law which, we are sorry to say, too often governs the descent of books as well as of the malady whose history occupies its pages,—

"————nequiores, mox daturos
Progeniem vitiosiorem."

Art. II.—*An Apology for the Nerves; or their Influence and Importance on Health and Disease.* By Sir George Lefevre, m.d. &c.—*London*, 1844. 8vo, pp. 364.

In laying down Sir George Lefevre's book we could not help exclaiming with Prince Henry, in Sir George's own vein—"We could have better spared a better man." Like the author's 'Life of a Physician,' the present book is clever and amusing, but we cannot say, that it is a particularly good medical book. Sir George is somewhat flighty and discursive, and is almost too humorous for a grave matter-of-fact writer on physic;—but we have been too much tickled with some of his narratives to be able to exercise the vocation of the critic in the wonted cool and crabbed style. We shall, therefore, let him pass scot-free this time; but we give him fair warning that his next book, if professional, shall be dealt with as strictly as if he were the dullest of doctors. But if we were disposed to do so, our present limits would not allow us to dwell on either the merits or demerits of the present volume. We must content ourselves with giving the reader a brief note of its principal contents, assuring him, at the same time, that though he may not derive a vast deal of novel information from it, he cannot fail to be both interested and amused by its perusal.

The work is divided into twelve parts and an appendix. Part first is devoted to a consideration of the brain and nerves, respiration and animal heat. Sir George Lefevre here labours to show the primordial rank and importance of nerve over muscle and blood, which last he admits to be "collaborators" with the former in all the functions of life, but not "coequals" with it. (p. 10.)

As regards respiration, we are informed (p. 17,) that its uses are the "purification of the blood and the generation of animal heat." In the function of respiration, "assumed" by some to be "wholly chemical," we, in the author's opinion, "recognize" the nervous power in the "voluntary" action of throwing the blood into the chemical laboratory." (p. 17.) Though in a chemical point of view, "the whole phenomenon of animal heat is resolvable into the different capacities with which certain forms of matter are endowed with for caloric," or to a process of combustion, similar to that of charcoal, out of the body, and by which the carbon of the blood, uniting with oxygen, and being converted into carbonic acid, gives out heat, yet observes the author, (p. 18,) "a host of evidence proves, that, however this process may be effected, .... it is the brain which has the supremacy in the function; for were it merely chemical, the same conjunction of matters would produce the same effects, which does not prove to be the case." And then he refers to Sir B. Brodie's experiments on artificial respiration.

In perusing the following parts on the blood, muscular motion, circulation, nutrition, and secretion, the reader will be much interested, as well as by the notices which follow on sympathy, phrenology, mesmerism, sleep and dreams.

In part V, and up to XI inclusive, a variety of matters, physiological, pathological, and therapeutic, are brought under notice, and made the subject of popular illustration. Among these, we may instance the five senses, voice and speech, the influence of the blood upon the nerves, nervous complaints, headaches, epilepsy, hysteria, palsy, catalepsy, hydrophobia, &c. &c., fevers, Moldavian fevers, sciatica, iritis, earache, homœopathy, instinct and reason, memory, &c. Most of the pathological and therapeutical notices are illustrated by some case or cases, most graphically detailed,—and proving that the author is very capable of writing a much better book than he has now favoured us with.

In part XII, which is entitled "German therapeutics—Some peculiarities of German practice," (p. 271)—we meet with some interesting particulars, one or two of which we shall notice. "The Germans," Sir George informs us, "boast of a simplicity of prescription, and have a horror of contrarieties, carrying this to a ludicrous nicety, and an unmeaning orthodoxy." Anything stronger than distilled water is regarded as not inert. At page 281, what is called the grape cure is described. It is employed in "functional nervous affections" in persons of higher rank, which have resisted ordinary methods of treatment. A lady of quality migrates into the country, turns a poor peasant out of his hut, (amply recompensing him, however,) endures its filth, sleeps on the peasant's crib, and "uses the grape alone for meat, the grape for drink." This regimen continues for three weeks or a month.

Muriate of ammonia is employed in cases of "serous and mucous congestion," (p. 287,) and along with tartarized antimony in pleuritic affections. Nitrate of soda is considered by the Germans as more antiphlogistic than nitrate of potash. Phosphoric acid is employed in all those cases in which British practitioners use sulphuric and muriatic (hydrochloric) acid. An etherial tincture of digitalis seems to have some advantages over the one employed by us. Indigo is a popular remedy with the German physicians in cases of epilepsy, hysteria, and in all convulsive diseases of children. Extractum graminis (triticum repens) is considered "a mild tonic, and deobstruent in the convalescence of fever." It is greatly used, as well as the extract of taraxacum. Ox-gall and the oleum jecoris aselli appear to be a good deal prescribed.

In the appendix to the work, which occupies nearly a fourth part of the volume, and for the dissociation of which from the rest of the work we can perceive no cause, several very odd cases are narrated. One of the oddest is given at p. 323, under the head "Credat Judæus," extracted from a work in the Romanzoff library, at St. Petersburg: A woman was brought to bed of a girl, who, in its turn, eight days after its birth, was taken with labour-pains, and gave to the world an "embryo" as long as the middle-finger, which, as it bore the human form, was baptized, but died (alas!) along with its mother, the day after.

Under the head, "Cæsarean operation," Sir George mentions the case of a woman at St. Petersburg, who had *twice*, and successfully, undergone the operation.

In a notice of Plica Polonica, Sir George informs us that as he has witnessed the disease in five opulent families, the pathogenical theory which derives it *wholly* from filth, must be rejected. It appears that the lower orders in Poland believe that it relieves many other diseases, pains, &c., and actually take means, by keeping the head long wrapt up in flannel, to induce the plica artificially. Sir George says little or nothing about the treatment.

ART. III.—1. *An Essay on the Nature, Causes, and Treatment of Deafness; and on the Diseases and Obstructions of the Cavity of the Tympanum, and of the Eustachian Tube, as causes of Deafness; and a new method of treating them by Medicated Vapour. With a List of Cases.* By D. CRONIN, Surgeon.—*London*, 1840. 12mo, pp. 114.

2. *Observations on the Efficacy of Traction in the Cure of Consumption and Asthma. With authentic Cases.* By D. CRONIN, Surgeon to the Free Dispensary for Asthma, Consumption, and Diseases of the Heart, 94, St. Martin's Lane.—*London*, 1843. 12mo, pp. 70.

3. *Observations on the Preparation and Administration of Arnica Montana, or Leopard's Bane, and Scrophularia Nodosa, in the Cure of Nervous Deafness and Palpitation of the Heart.* By D. CRONIN, M.D., Physician to the Strand Dispensary for Consumption, Asthma, and Diseases of the Heart.—*London*, 1844. 12mo, pp. 52.

IN our last Number, in speaking of certain professed curers of consumption, we gently insinuated that the author of the above works might be ignorant of the natural history of this disease, and might, in so far, be regarded as a "blockhead." We have, however, since found out our mistake; and we hereby beg to apologize to our readers for the employment of an epithet, which a more careful perusal of his works has shown us to be inapplicable to him. On the contrary, we regard Mr. Dr. Cronin as a very clever fellow indeed; but, having been wrong once, we are somewhat timid in fixing on the precise epithet which ought to be substituted for the obnoxious one here repudiated. Perhaps our readers may kindly assist us in the delicate task; and in order that they may have some data to go upon, we will present them with a single quotation from each of Mr. Dr. Cronin's treatises.

> "By a peculiar combination I have been able to produce a fluid, and which for the present I shall call '*Acoustic*' liquid or fluid, which, when dropped into the ear, restores the hearing, in a time proportioned, in some degree, to the duration and severity of the disease. In many cases, two or three applications alone have been sufficient to produce a most obvious amendment, or even complete cure: in others a longer perseverance in the application of the fluid has been necessary. However, but few cases, unless indeed a total disorganization of the auditory apparatus has been effected, have resisted a fortnight or three weeks' application." (Essay on Deafness, p. 57.)
>
> "Is Consumption curable, or is it not? For the information, and perhaps for the consolation, of the reader, I declare positively and unequivocally that it is in most instances curable by my method; and I have, within the last two years, by the simple means presently to be described, cured from seven to eight hundred well-marked cases of Consumption, many of which had been treated and given over by men of the very first professional eminence, both in London and the provinces." (Observations on Consumption, &c. pp. 9-10.)
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> "This tincture requires some care in its preparation, in order to ensure its full benefit. I have given the formula to Mr. A. Molton, No. 113, Strand, Apothecary to the 'Dispensary for Consumption and Diseases of the Heart,' from whom it may be had in a most efficient state........ I mix three drops of the tincture with an equal proportion of water, and by means of a simple tubular apparatus, convey it (vaporized) into the ear. The effect is astonishing, and the patients themselves express their great surprise at its efficacy, and the relief afforded. Some, and even apparently the worst cases, hear almost instantaneously, and can enter into, and keep up a conversation for a considerable time—what, perhaps had not occurred to them for years before. (Observations on Arnica, pp. 18-19.)

> "Reflecting upon the effects of Arnica, as a tranquillizer of the nervous system, as noticed in a previous part of this Essay, I was resolved to test its powers and its virtues in palpitation, and I was much gratified to find that I had appealed to a very active and efficient remedy. In many cases, the history of which I have hereunto appended, I had the good fortune not only to afford considerable relief, even to the most hopeless, but farther, in by far the majority, to effect a complete cure." (Ibid., pp. 37-8.)

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ART. IV.—*Elements of Anatomy, intended as a Text-book for Students.* By ALEX. J. LIZARS, M.D., Professor of Anatomy in Marischall College, Aberdeen. Part III, *containing the Organs of Nutrition and Generation.—Edinburgh*, 1845. 12mo.

THIS is the concluding portion of a text-book of which we gave a very favorable report on the appearance of the first part. (Brit. and For. Med. Rev. vol. IX, p. 539.) The small work preserves its character to the close, and we can conscientiously recommend it to the student as an excellent manual which, in the words of the author, "will enable him to follow lectures on anatomy with every possible facility, and will supply him, at the termination of his studies, with the readiest means of reviewing this branch of science within the narrowest limits."

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ART. V.—*The Anatomist's Vade-Mecum: a System of Human Anatomy.* By ERASMUS WILSON. With 186 Illustrations, by BAGG. Third Edition.—*London*, 1845. 8vo, pp. 648.

WE said so much in praise of the beauty and goodness of this book on two former occasions, that we feel at a loss what to add on its third appearance on our stage. And yet it merits additional commendation, as it now presents us with all its old excellencies, and many new. Among the last, we observe the following: A description of the development of bones, p. 4; the structure of ivory, p. 65; the general anatomy of cartilage and fibrous tissue, pp. 112-17; the structure of muscular fibre, p. 163; the structure of nerve, p. 401. These subjects are all beautifully illustrated by figures "drawn from the microscope by the author himself, with the aid of the camera lucida." The new figures, twenty in number, as well as all the rest are admirable. One great merit of the 'Vade-Mecum' is, that it comprises good general as well as descriptive anatomy. The following interpretation of well-known appearances in the conformation of the vertebral column, is as beautiful as ingenious.

> "The transverse processes consist essentially of two parts, the anterior of which in the dorsal region is the rib, while the posterior retains the name of the transverse process. In the cervical region these two elements are quite apparent, both by their different points of attachment to the vertebra, and by the vertebral foramen which divides them at their base. In the lumbar region the so-called transverse processes are, in reality, lumbar ribs, while the transverse processes will be found behind them in a rudimentary state, developed like the true transverse processes in the cervical region, from the superior articular processes. When the anterior and posterior transverse processes are examined in relation with each other, they will be observed to converge; and if the latter were prolonged they would unite as in the cervical region and enclose a foramen, or they would rest in contact as in the dorsal region, or become consolidated as in the formation of the sacrum. Moreover, the posterior transverse processes are directed upwards, and if they were prolonged, they would come into contact with a small tubercle which is found at the base of the posterior transverse process, (in strongly marked vertebræ) in the vertebra above. This junction would form a posterior intervertebral

foramen, as actually occurs in the sacrum. In brief, the lumbar vertebræ exhibit those transitional changes which are calculated, by an easy gradation, to convert separate vertebræ into a solid bone. The transverse processes of the eleventh and twelfth dorsal vertebræ are very interesting in a transcendental point of view, as exhibiting a tendency which exists obscurely in all the rest, namely, to trifurcate. Now supposing these three branches to be lengthened in order to fulfil their purposes, the anterior would constitute the articulation or union with a rib, while the superior and inferior would join similar branches in the vertebra above and below, and so form the posterior intervertebral foramen." (p. 16.)

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## Art. VI.—*Treatise on Inflammation as a process of Anormal Nutrition.* By J. H. Bennett, m.d. f.r.s.e. &c. &c.—*Edinb.* 1844. 8vo, pp. 80.

This treatise, we are informed, is the substance of six lectures delivered at the evening meetings of the Royal College of Physicians in Edinburgh, in the summer of 1843.

Dr. Bennett discusses his subject under the following heads: 1st, cellular theory of nutrition; 2d, the blood; 3d, the capillaries; 4th, the early phenomena of inflammation; 5th, the essential phenomena of inflammation; 6th, terminations of inflammation; 7th, the circumstances influencing the terminations; and lastly, the conclusions from the whole.

Dr. Bennett's leading view is that an anormal exudation of blood-plasma constitutes the essential phenomena of inflammation. In this he accords with the views which have been recently expressed by ourselves; and we believe that the tendency to found upon it the essential distinction between congestion and inflammation is gaining ground among intelligent pathologists.

The subject of inflammation has of late been so fully discussed in this Review, that it is unnecessary to dwell on it on the present occasion. There are a few points, however, in the treatise before us, which Dr. Bennett calls attention to, as not having been noticed before. They are the identity in structure between the capillaries and non-voluntary muscular fibre; the structure of lymph in its various forms; the distinction between the plastic and exudative corpuscles; the identity of the latter with the granular bodies of the colostrum; and the means of distinguishing inflammatory and non-inflammatory softening.

In regard to the identity in structure between the capillaries and non-voluntary muscular fibre, we must confess that we have not been able to follow Dr. Bennett's demonstration of it. The contractility of the wall of the true capillary has of late been an open question, and we think that it still remains so from anything that Dr. Bennett has adduced on the point. Here we may remark that, in speaking of the resemblance between the fibres of the middle coat of arteries and of the muscular coat of the intestines, Dr. Bennett overlooks what Henle has done and said on the subject, and as to the contractility of arteries we do not think that Dr. Bennett correctly represents the present opinions of physiologists and pathologists on the point, when he attributes to them the opinion that the arteries are not contractile.

As to the other points referred to, we shall not stop to inquire into their novelty; it is enough to remark that Dr. Bennett discusses them very well. His lectures may be advantageously consulted by those who desire to become acquainted with the various recent contributions—foreign as well as British—to our knowledge of the subject.

Art. VII.—*Principles of Human Physiology, with their chief applications to Pathology, Hygiene, and Forensic Medicine. Specially designed for the use of Students.* By W. B. Carpenter, m.d. f.r.s., Fullerian Professsor of Physiology in the Royal Institution of Great Britain. Second Edition.—*London*, 1844. 8vo, pp. 746.

This volume reached us at so late a period of our quarterly labours, that we are able to do little more, at present, than to announce its publication. It is, however, though only a second edition, much too important a work to be so disposed of; we, therefore, purpose to notice it more formally in our next Number, more especially as regards the improvements and additions contained in it. Both of these are numerous and important; and, as the profession has, moreover, sanctioned our former judgment by so soon calling for a republication of the work, we feel more than justified in here repeating what we said in our review of the first edition :—"Our author has provided us with a work admirably calculated not only to guide and direct the student of physiology, but, from the agreeable mode in which old facts are presented, and new views opened up, also to afford pleasure and instruction to the deeply-learned in this branch of medical science. The style is everywhere easy, perspicuous, and appropriate to the subject. The numerous woodcuts and engravings, [greatly increased in number in this edition,] with which the descriptions are illustrated, are judiciously selected, and excellently executed. We speak advisedly when we say, that we know of no work on physiology from which the student is likely to derive so much advantage; the whole of it reflects the highest honour upon the talents, knowledge, and judgment of the author." (Brit. and For. Med. Rev., April 1842.)

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Art. VIII.—*A Dictionary of Terms used in Medicine and the Collateral Sciences.* By R. D. Hoblyn, a.m. Oxon. Second Edition, revised and enlarged.—*London*, 1844. 8vo, pp. 394.

We gave a very favorable account of this little book on its first appearance, (Br. and For. Med. Rev. vol. I, p. 517,) and we have only to repeat the same, with increased emphasis. It is, for its size, decidedly the best book of the kind, and ought to be in the possession of every student. Its plan is sufficiently comprehensive, and it contains an immense mass of necessary information in very small compass.

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Art. IX.—*A Manual of Elementary Chemistry, Theoretical and Practical.* By George Fownes, ph. d., Chemical Lecturer in the Middlesex Hospital Medical School, and to the Pharmaceutical Society of Great Britain.—*London*, 1844. Flscp. 8vo, pp. 566.

This is another of the beautiful series of Manuals, for which the profession is indebted to our spirited publisher; and it is well worthy to take its place in the series. Having examined it with some attention, we feel qualified to recommend it to our younger readers as an admirable exposition of the present state of chemical science, simply and clearly written, and displaying a thorough practical knowledge of its details, as well as a profound acquaintance with its principles. The chief fault which we have to find with it,—in common with every chemical work that we have ever opened,—is, that the mass of details, of no interest or importance but to the professed chemist, is so great, as to weary the attention of the student, and to prevent him from thoroughly mastering that which it is essential for him to acquire. This is especially important in regard to medical students; the necessary demands upon whose time and mental application are so great, that as little as possible of either should be wasted upon what is superfluous. We could wish that Mr. Fownes had omitted some of these useless details, for the sake of extending the portions most useful to the medical student and practitioner,—those, namely, which explain the various processes of the Pharmacopœia, and which relate to the operations of animal and vegetable nutrition. All that he has written on these subjects is so good, that we cannot but desire to see it extended; even if the description of some hundred or two of compounds of which the student will never hear again, should be omitted to make room for it. The author has desired to give a practical character to the work, by giving a full and clear account of numerous laboratory processes. We could wish that he had added to his chapter on *ultimate* analysis (to which no medical *practitioner* can ever hope to give much attention) a similar code of directions for *proximate* analysis, a knowledge of which is becoming every day more important, and in which no one need despair of attaining tolerable success.

The illustrations, and the whole getting-up of the book, are fully equal to those of the preceding volumes of the series; than which we can give no higher praise.

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ART. X.—1. *The Medical Remembrancer, or Book of Emergencies; in which are concisely pointed out the immediate remedies to be adopted in the first moments of danger from Poisoning, Drowning, Apoplexy, Burns, and other Accidents; with the Tests for the principal Poisons, and other useful information.* By E. B. L. SHAW, Surgeon. Second Edition.—*London*, 1845. 18mo, pp. 108.

2. *The Prescriber's Pharmacopœia: containing all the Medicines in the London Pharmacopœia, arranged in classes according to their action, with their Composition and Doses.* By a Practising Physician. Third Edition.—*London*, 1845. 18mo, pp. 144.

1. THE plan of the first of these little books is well conceived, and the execution corresponds thereunto. Its principal contents are detailed in the title above transcribed. It costs little money, and will occupy little room; and we think no practitioner will regret being the possessor of what cannot fail, sooner or later, to be useful to him. The only criticism we have to offer, is on the part devoted to "the minor operations." These are clearly out of place in such a work as this. What have bleeding, cupping, electricity, issues, and vaccination, to do with sudden emergencies?

2. The second of our Lilliputian friends is an old acquaintance and old favorite; and we doubt not, from the additions which we see have been made to it, that, in its present form, "it will be found," as the editor hopes, "still more deserving the patronage of those for whom it is intended." It is truly the prescriber's book,—and we advise all who prescribe, to add it to their Christmas stock of purchases. They will thank us for advising them to do so. It is a medical Christmas-pie.

Art. XI.—*Facts and Observations in Medicine and Surgery; the gleanings of ten years of active general practice, and having particular reference to Fractures and Dislocations, Gunshot Wound* [*s*], *Calculus, Insanity, Epilepsy, Hydrocephalus, the Therapeutic application of Galvanism, and Fibrinous Diarrhea.* By John Grantham, &c. &c.—*London,* [*no date.*] 8vo, pp. 216.

A book sometimes fulfils, sometimes fails to fulfil, the promise of its title-page. The work before us, we are sorry to say, must be classed among the latter. The notices, somewhat ostentatiously paraded, of "Fractures and Dislocations, Gunshot-wound, Calculus," &c., appear, on inspection, to contain nothing particularly requiring or warranting their transference from the 'Medical Gazette,' where, we are informed in the preface, they originally appeared, and their reproduction in a volume. We do not deny that several of the articles are respectable contributions to periodical literature, and were probably useful in their original sphere; but what we object to is, the needless addition of an octavo volume holding forth hopes which it by no means realizes, to our already cumbrously large collection of medical literature.

Of the two parts into which the work is divided, the surgical is the most worthy of attention, yet, even in this, with one or two exceptions, there are no facts or cases of a novel or particularly interesting character.

One case, entitled "Granulating surface, measuring 600 square inches, recovery," contains the history of a boy, who was extensively scorched, by an explosion of fireworks, and in whom, the upper and fore part of the neck, the left arm to the insertion of the deltoid, both axillæ, and round the posterior part of the body, to within three inches of the spines of the vertebræ, the chest, body, and genitals, to the verge of the anus, the upper part of the right thigh and the left thigh to the knee, were denuded of cuticle, rete mucosum, and corium, as well as of the subcutaneous structure, so that the "arteries and veins were seen, as if neatly dissected, lying on the surface of the muscles and fascia. (p. 91.) Mr. Grantham's treatment of this case, as of several others recorded in his book, seems to have been extremely judicious and very creditable to him, although, at the same time, nothing in that treatment was new or remarkable.

At page 100, a case of rupture of the rectus femoris is given. It was that of "a stout, hale man," who was running with his son. Mr. Grantham did not see the man till six weeks after the accident had occurred, when he found the muscle "drawn one third up the thigh, and with a corresponding depression above the patella." (p. 101.) Of course, nothing could be done: but Mr. Grantham informed the patient, the "power was gone, but that it would be supplied from the two vasti muscles." (p. 102.)

In conclusion we would say, that while the contents of this volume prove Mr. Grantham to be as ableand judicious a practitioner as we know him to be a most respectable man, we are still of opinion that he would have best consulted his own reputation by leaving them in their original locality.

We must also complain of the style of this work. It is perhaps not easy to speak with too great severity of its incorrectness.

Formerly, a grammatical knowledge of language and a correct style were thought essential in a writer of books; but many of our medical authors do not seem to trouble themselves about such matters. But we would have them to know, that a man has no more business to *write* until he has mastered his language, than he has to *practise* until he has mastered his physic and his surgery.

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ART. XII.—*Remarks on the Use of Vivisection, as a means of scientific research; in a Letter addressed to the Earl of Caernarvon, President of the Society for preventing Cruelty to Animals.* By RICHARD JAMESON.—*London*, 1844. 8vo, pp. 52.

IT appears that the society in question, a few years since, honoured with a prize of £100, an essay by the Rev. John Styles, D.D., on the claims of the animal creation on our humanity; in which essay, a multitude of most absurd fictions are propagated, in regard to the cruelties practised by medical men upon the unfortunate subjects of their experiments. Thus the reverend doctor gravely informs the public "that every surgeon's apprentice thinks himself entitled to find his way into the arcana of nature by scalping cats and rabbits to see where their brains lie;" and much more to the same effect. We feel much inclined to believe with Mr. Jameson, that in his search after *horrors*, wherewith to gratify the taste of his judges, and render his arguments the more pointed, Dr. Styles encountered some waggish students who thought to satisfy his love of the marvellous by telling him horrible stories of "what they did at the hospital."

The positions which Mr. Jameson undertakes to prove, are the following:

"1st That the *number* of experiments practised upon living animals is grossly exaggerated by the writers employed by the society.

"2d. That the *pain* caused by these experiments is also in many cases exaggerated.

"3d. Admitting that, in many instances, much pain is the result, vivisection is notwithstanding *necessary* as a means of acquiring and of imparting useful knowledge.

"4th. But whilst necessity alone compels us to take away the lives of animals, *our accusers* are daily accessory to their wholesale destruction and torture, for the mere gratification of luxury, or as an amusement to while away the passing hour."

In these positions we entirely accord with the author, and we think that he has sustained them well. Our readers must be well acquainted with our own views on the subject, which are briefly these: that, to establish an important position, or to resolve a doubtful question, whether its consequences have an immediate practical bearing, or are *at present* interesting merely in a scientific point of view, (all science must *ultimately* have a beneficial influence on our practice,) vivisection is justifiable, but that recourse should not be had to this means of investigation, until all possible light has been obtained from other sources of inquiry; that the experiments should be so devised as to cause the smallest amount of animal suffering, and that when their end is once answered, they should not be needlessly repeated.

We cannot think that the British school of physiology is chargeable with much error in this respect; whatever may be the faults of our continental brethren.

## PART THIRD.

# Original Reports and Memoirs.

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## REPORT ON THE PROGRESS OF HUMAN ANATOMY AND PHYSIOLOGY IN THE YEARS 1843-4.

By James Paget,
Lecturer on General and Morbid Anatomy and Physiology, and Warden of the Collegiate Establishment, at St. Bartholomew's Hospital.

The purpose and the general plan of the following Report are similar to those of the last. The works noticed are, with a few exceptions, those published between the first day of October 1843, and the last of September 1844. It is, for many reasons, larger than that of last year; chiefly because more progress has been made in the sciences of which it treats, and many of the subjects in which that progress has been effected are too important to be lightly passed by, and too difficult for a brief account of them to be clear.

### CHEMICAL COMPOSITION OF THE BODY.

*Elementary constituents.* The researches of MM. Devergie and Hervy are known, which appeared to prove the existence of small quantities of copper and lead in the tissues of the human body. MM. Flandin and Danger, and the commission of the Academy of Medicine, contradicted these observations;* but M. Barse, in a paper, read before the Academy of Sciences of Paris, in August 1843, confirmed them by finding both the metals in the bodies of two persons to whom they could not have been given for poisons. The researches of Signor Cattanei di Momo seemed to prove that the metals do not exist in the bodies of new-born children or infants; and, now, M. J. Rossignon has given a probable account of the sources from which the bodies of adults derive one of them—the copper. He has found this metal in the blood and muscles of the dog, and in many articles of vegetable and animal food, e g. gelatine from bones, sorrel, chocolate, bread, coffee, succory, madder, and sugar. The ashes obtained from starch-sugar yield 4 per cent. of copper; those of gelatine 0·03 per cent.; those of bread 0·005 to 0·008 per cent.†

*Proteine compounds.* The most valuable contributions made this year to the science of animal chemistry are the works of Professor Mulder.‡ By his continued investigations he has discovered two new proteine-compounds of great importance, a binoxyde and a tritoxyde (bi-oxy- and tri-oxy-proteine). The former contains two, the latter three, equivalents more of oxygen than pure proteine does. One or both of these compounds exists ready-formed in arterial and all inflammatory blood; in the buffy coat; in pus; in false membrane; in vitelline substance; in cooked meat. It is probable that they are both formed by the oxydation of fibrine (or, at least, of that compound of proteine which appears as fibrine when blood coagulates), as often as the blood passes through the lungs. When blood coagulated by heat is digested with water, much of the tritoxyde of proteine is dissolved; and it appears to constitute a large portion of the *serosity, muco-extractive matter, and extrait de viande* of different authors. Mulder considers also that it is in its combination with proteine in these oxydes that oxygen is conveyed to the systemic capillaries (see page 253), where it is consumed, and whence, in place of the oxy-proteine, fibrine returns to the lungs in the venous blood.

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* Bulletin, Fevr. 19, 1839.

† Medical Gazette, Dec. 1, 1843, from the Gazette Médicale.

‡ Proeve eener algemeene Physiologische Scheikunde; Rotterdam, 1843, 8vo. The part of this work which relates to all the proteine-compounds is translated by the writer in the Medical Gazette, Sept. and Oct. 1844; and a more complete account of the two compounds above mentioned is given in the same journal, Feb. 9, 1844, by Dr. G. Bird, from a paper in the Annalen der Chemie und Pharmacie, Bd. xlvii, p. 300.

Both compounds exist in excess in the blood during inflammatory diseases. They form the greater part of the buffy coat, and of false membrane. When a buffy coat is digested in water it is divided into two portions: one soluble, of which the greater part is hydrated tritoxyde of proteine, (and it is this which M. Bouchardat supposed to be gelatinous matter,) the other insoluble, consisting of binoxyde of proteine with fatty matter. The composition of false membranes is the same with the addition of gelatine. In pus the tritoxyde of proteine is what has been described under the name of pyine; a chief portion of vitelline substance is a sulphuret of the binoxyde.

The same compounds which are thus ready-formed in the living body may be, in several ways, artificially obtained. Both of them are formed by the oxydation of fibrine when it is boiled in water*; the tritoxyde alone is similarly formed from albumen. It is this tritoxyde which has been supposed to be gelatine obtained by the decomposition of albumen or fibrine when subjected to long boiling. The hydrated tritoxyde may be obtained by forming a chlorite of proteine (by passing a current of chlorine through a solution of albumen) and decomposing this with ammonia. The binoxyde may be obtained by the decomposition of the bisulphide of proteine which forms a chief constituent of hair. Lastly, when fibrine is partially dissolved in very dilute hydrochloric acid, the precipitate obtained by adding ammonia (the *albuminose* of Bouchardat) is an anhydrous tritoxyde of proteine; and the portion which is not dissolved by the acid is, probably, binoxyde of proteine. The formula of the binoxyde given by Mulder is C. 40, H. 62, N. 10, O. 14; that of the tritoxyde, C. 40, H. 62, N. 10, O. 15.†

M. Wurtz‡ finds in the products of the putrefaction of fibrine exposed for eight days in summer to the air, albumen, carbonic acid, acetic acid, *butyric acid* and ammonia. He considers that the production of the last-named acid indicates that fibrine (and, perhaps, the other proteine compounds) may be transformed into the neutral fatty bodies which are so intimately related to the volatile fatty acids.

He has also succeeded in removing from albumen of white of egg, all the inorganic matters through its combination with which it has been supposed to derive its solubility in water; and this without altering its solubility, or its other essential chemical characters.

*Gelatine.* Mulder's analyses from which he deduced his formula for gelatine (C. 13, H. 20, N. 4, O. 5), have been confirmed by Van Goudoever, who has also analysed gelatine which had lost its power of gelatinizing by long-continued boiling, and has found its composition to be C. 49·5, H. 6·56, N. 17·36, O. 26·58, or, in equivalents, C. 52, H. 82, N. 16, O. 21. He hence deduces that it is changed into a compound in which four equivalents of gelatine are united with one of water, (4 (C. 13, H. 20, N. 4, O. 5) + aq.); a compound analogous to one of those of gelatine with chlorous acid, discovered by Mulder (4 (C. 13, H. 20, N. 4, O. 5) × Cl. 2, O 3).§

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* It is probably by a similar oxydation that we may explain the observation of Scherer, that moist fibrine when exposed to oxygen absorbs more of it than it gives off of carbonic acid.

† For these formulæ, the equivalents of the elements are considered to be O. 100, C. 76·437, H. 6·24, N. 88·36.

‡ Report of the Academie des Sciences, seances du 15 et 20 Avril, in the Gazette Médicale; and in the Ann. de Chimie et de Physique, Oct. 1844.

§ Physiologische Scheikunde, p. 351, where also is a suggestion of the mode in which gelatine may be formed from the proteine-compounds of the food.

*Fatty Principles.* Mulder has also discussed, at some length, the chemical physiology of the fatty matters of both plants and animals. He adopts the opinion of Berzelius and Redtenbacher* that the basis of neutral fats is an oxyde of a radical, which they name Lipyle, and of which the formula is C. 3, H. 4, that of the oxyde being C. 3, H. 4, O. With stearic, margaric, and elaic acids, this forms stearine, margarine, and elaine: and glycerine is not present (as such) in the fats, but is formed in their saponification by the union of two equivalents of the oxyde of lipyle, with three equivalents of water.

After suggesting the modes in which the several kinds of fat may be transformed in their passage from plants to animals, and from the body of one animal to another, he considers whether the neutral fats taken as food are conveyed, unaltered, into the tissues in which they are deposited, or are saponified, and again reduced into neutral fats by being made to combine with lipyl-oxyde in the body. He supposes they are saponified by the alkali of the bile and chyle; and that glycerine is, at the same time, formed, and carried with them into the blood. The question, in this case is, how is the neutral fat reproduced? for glycerine will not unite again with the fat-acids to form neutral fats. He supposes that the change is effected by the union of the fat-acids with nascent lipyl-oxyde, and that this is produced in such circumstances as, if more oxygen were present, might give rise to the formation of lactic acid. For when lactic acid is sublimed, a white substance is obtained which has the composition of a binoxyde of lipyl (C. 3, H. 4, O. 2), and of which two equivalents, when it is in contact with water, absorb one equivalent of water, and form lactic acid. And, for explanation of the way in which these changes may be brought about, he refers to the researches of Lehmann‡ on the influence of mixtures of fat and albumen in inducing chemical changes in other principles.§

*Spontaneous decomposition.* Dr. Helmholtz|| has published some interesting experiments for the determination of the conflicting views respecting the nature of the so-called spontaneous decomposition of dead organic substances. The question has, for some time, been, whether these are due to the development of microscopic organisms, to which the substances decomposed serve as nutriment, and the secretions of which are the products of the decomposition; or whether the process is one of mere chemistry.

In the first place the author confirms the fact already known (but which Liebig tried to explain away) that these decompositions do not take place in substances which have been heated to the boiling point, and which are only supplied with air that has been exposed to a red heat. He found that azotized organic substances, derived from the animal proteine- and gelatine-compounds, remained unaltered for eight weeks in summer, though freely supplied with air, provided that air had all passed through a red-hot glass tube before coming to them. *They consumed the oxygen:* but no process of fermentation or decomposition could be detected: yet it soon commenced, with the attendant development of infusoria, when only a small quantity of air which had not been heated was introduced.

With other spontaneously-decomposing azotized compounds, these peculiarities are not observed. Hydrocyanic acid and urea decompose as rapidly at the boiling heat and in closed vessels, as they do when exposed to the air. Moreover, when urea decomposes in closed and heated vessels in which it is mixed with other organic substances, neither fermentation nor putrefaction is excited in them by its decomposition.

Again, organic substances do not ferment or putrefy when no oxygen is supplied to them except such as has been immediately derived from water decomposed by electricity. So that it appears that neither oxydation, nor the spontaneous decomposition (resembling putrefaction) of urea, nor the chemical movement pro-

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* Annalen der Chemie und Pharmacie, August 1843.

† The formulæ given by Mulder are here adopted, in which water is considered as H. 2, O.

‡ In Simon's Beit. zur Phys. und Path. Chemie, Bd. 1, p. 73.

§ Physiol. Scheikunde, p. 262-82.

|| Müller's Archiv, 1843, Heft v.

duced by the electric current, nor the presence of any of those constituents of the atmosphere which remain undecomposed by a red heat, is capable of exciting the fermentation or putrefaction of organic substances. Since, however, the presence of some part of the atmosphere is necessary for it, it can be only by one or both of the two remaining constituents that it is excited, and these are, the exhalations of putrefying substances, and the germs of organic beings.

To determine which of these two is the real excitant of the process, Helmholtz separated them. He filled a vessel with fluid capable of putrefaction, but heated and excluded from the air, so that it would not putrefy spontaneously, and then he introduced into it another fluid, also capable of putrefaction, and which had not been heated nor excluded from the air; introducing it, however, by endosmosis through a bladder which even the smallest organic germs could not pass through. The fluid thus introduced excited putrefaction in that within the vessel, and the process went on as quickly as it would if the first fluid introduced had been exposed to the air. But its results were different from those of open putrefaction; the organic fluids though they developed gases and had a putrid smell, remained clear; the portions of flesh placed in them remained firm, though putrid; and no infusoria were produced. Experiments of the same kind did not succeed in exciting vinous fermentation. Although endosmosis took place, yet no gases were developed, and no yeast-vegetables were produced.

It appears then, 1st, That for putrefaction of animal substances (at least of the proteine- and gelatine-compounds), the most essential condition is the presence of putrefying particles of similar substances: though perhaps it may also be excited by a vital process. 2d. That the putrefaction of these substances differs from the spontaneous decomposition of other azotized compounds, by its capability of propagating itself. 3d. That it presents the most favorable condition for the development of living organisms; and, that this, though not essential to the process, modifies its result. And 4th. That the vinous fermentation is connected with the access of some solid body, which may be excluded by the interposition of a bladder, and which can only be supposed to be the *yeast-plant*. Of this yeast-plant, analyses confirming, though independent of, each other have been made by Mulder[*] and Schlossberger[†]. Carefully-purified yeast yields two distinct substances, of which one, comprising the cell-contents, and extracted by potash or acetic acid, resembles the proteine-compounds; and the other, comprising the cell-membranes, might be classed with the amylum or cellulose compounds.

As one of the products of spontaneous decomposition, Dr. Zimmerman[‡] has illustrated the formation of the triple phosphate in numerous putrefying organic substances besides the urine. The crystals form much less abundantly, or not at all, when those compounds are removed from the several substances which, in their decomposition, may yield ammonia, such as proteine-compounds, mucus, pus, &c.

## BLOOD.

*Coagulation.* An inexplicable case, in which the complete coagulation of the blood did not take place till fifteen days after its abstraction, has been published by Dr. Polli,[§] whose former researches on the blood were given in the last Report, and who adduces this case in proof that there is no blood which becomes putrid before it has coagulated. The patient was a man 37 years old, with acute pneumonia. The blood of a first bleeding was drawn into a block-tin vessel, and set in a temperature between 46° and 52°. It remained liquid for eight days, the blood-corpuscles having settled to the bottom, with the liquor sanguinis floating above them, exactly like serum pressed from a clot. On the ninth day, a membranous pellicle began to form on the surface of the fluid, and this becoming thicker, and increasing in tenacity and consistence, acquired at last all the characters of the most genuine buffy coat. The serum began to ooze from the clot on the fifteenth day: and on the clot being now taken out of the vessel, it was found that the upper four-fifths of it consisted of buffy coat, and only the lower fifth of clot coloured with corpuscles. The serum which continued to be expressed was perfectly transparent, and the blood did not show signs of putrefaction till a month after it had been drawn from the body. (A small quantity drawn from another pneumonic patient, and placed under the same circumstances, was completely coagulated in two hours, and was quite putrid in fifteen days.) In fifteen bleedings of the same patient in the following eight days, the blood drawn gradually lost its indisposition to coagulate, the whole process being completed each time in twelve hours or less. The patient recovered.

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[*] The analysis of Mulder is stated by Schlossberger to be in the first part of his Physiological Chemistry. This refers probably to the German translation, which was published later than the Dutch original, in which I find no such analysis.

[†] Annalen der Chemie und Pharmacie, August, 1844.

[‡] Casper's Wochenschrift, Oct. 21, 1843.

[§] Gazzetta Medica di Milano, Gennaio 20, 1844.—*On the blood-corpuscles:* the discussion between Dr. Carpenter and Mr. Wharton Jones, whether it be by the red or by the pale corpuscles that the albumen is to be supposed to be transformed into fibrine, is continued in the three last preceding Nos. of this Review. I must be content to refer the reader to their several papers; and as to Mr. Addison's work 'On the Actual Process of Nutrition in the Living Structures,' and to his papers in the Prov. Med. and Surg. Trans. for 1843, and in several recent numbers of the Medical Gazette, for a further account of his views and observations respecting the apparent transformations of the pale corpuscles of the blood into pus-corpuscles, mucus-corpuscles, tissues, &c.

*Colour.* Some experiments by Scherer* both confirm the opinion of Nasse,† that the change from the arterial to the venous colour of the blood depends in great measure on the form of the blood-corpuscles, and explain most of the observations of Dr. Stevens on the effects of distilled water and salts upon the blood. Their general conclusions are: 1. That when fresh-stirred and bright-red ox-blood is mixed with distilled water, it acquires a dark-red colour, and its corpuscles, by imbibing water, become spherical, and at last vanish. But, 2. That if, after the change has begun, and not gone far, a concentrated solution of a neutral salt be added, the blood-corpuscles again acquire their natural form, and the bright-red colour is restored. 3. That when oxygen is passed through blood darkened by the addition of distilled water, it is not changed in colour, and the blood-corpuscles do not reappear; but that the same kind of blood, mixed with a small quantity of milk, or oil, or finely-powdered chalk, or gypsum, soon regains its bright red colour. 4. Again, by the long-continued contact of concentrated saline solutions with the blood-corpuscles they become jagged and decomposed, and the blood becomes black; and those which have been reddened by the action of salts, become black again on being expanded by the imbibition of water. 5. By adding carbonic acid to bright-red blood, its corpuscles change their biconcave for a biconvex form, and at the same time its colour changes from red to black. So that there are always changes in the shape of the blood-corpuscles, coincident with the changes in the colour of the mass of blood; whenever they are dilated, as by distilled water or carbonic acid, the dark colour is produced; whenever they are contracted into the biconcave form, the bright-red colour is restored.

Mulder, also,‡ espouses the opinion of the changes of colour in the blood being immediately due to physical rather than to chemical changes of the corpuscles, and has added many facts to those just quoted in disproof of the opinion of Liebig, that the changes are due to the alternate production of the carbonate of the protoxyde, and of the peroxyde, of iron in the blood-corpuscles, as they pass alternately through the systemic and the pulmonary capillaries. His chief facts are—1. That the elementary composition of the colouring matter is the same, whether obtained from arterial or from venous blood, viz., C. 44, H. 44, N. 6, O. 6, Fe. 2. That the change from dark to bright blood is effected as completely by the agency of a neutral salt as by oxygen. 3. That if the iron were present in the blood as an oxyde (and especially as a peroxyde), it should be easily extracted by weak acids;

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* Henle and Pfeuffer, Zeitschrift, &c., and Oesterr. Medic. Wochenschrift, Nov. 4, 1843.

† Handworterbuch der Physiologie; Art. Blut.

‡ Verslag van de Verliende Vergadering van het Nederlandsche Instituut in 'Het Instituut,' 1844, No. iv, and Physiologische Scheikunde, pp. 361-77.

but he has found that well-prepared hæmatine may be digested in diluted hydrochloric or sulphuric acid for several days without the iron in it being in the least diminished. After being so treated he has obtained, after incineration, the regular proportion of 9·49 per cent. of oxyde.* If strong sulphuric acid be poured on dried blood, or dried pure hæmatine, and kept on it for some days, and then water be added, hydrogen is evolved, and sulphate of peroxyde of iron is found in the solution, which could not happen if the iron had been at first in the form of peroxyde.† 5. The iron may thus be all extracted from the blood, or from hæmatine, (though not, as some say, without affecting the colour,) and the other constituents may be obtained in a separate form. Numerous analyses of this constituent, by Van Goudoever, regularly yielded the same equivalents of the elements, viz., C. 44, H. 44, N. 6, O. 6; but if the iron had been united with this in the form of Fe. 2, O. 3, and in the proportion of one equivalent to two, there should have remained only four and a half equivalents of oxygen.

Mulder concludes, therefore, that iron is present in hæmatine, as iodine is in sponge, or sulphur in cystine, or arsenic in cacodyl. His notion of the mode in which the changes of colour are effected is, that when the corpuscles of the venous blood are exposed in the lungs, oxy-proteine is formed by the oxydation of the fibrine-proteine of the liquor sanguinis, or, perhaps, by the oxydation of the outer layer of the cell membrane of the corpuscles. If formed in the liquor sanguinis, its peculiar plasticity would lead to its being deposited in a thin layer on the corpuscles. In either such case, the dark corpuscles would, after respiration, be invested by a thin layer of white and imperfectly transparent oxy-proteine, or buffy coat, through which they would look bright red, as dark blood does when contained in a vessel of milk-white glass. But, in the systemic capillaries, the oxy-proteine may be consumed in nutrition, and the darkness of the corpuscles will then again appear unveiled.

Moreover, since it appears that, in the biconcave form, the corpuscles by reflecting more light, are always bright, and in the biconvex form always dark, it may be that in the arterial blood they are not only *buffed*, but also *cupped*, by the oxy-proteine, [by the plastic properties of which, moreover, it is easy, on this pretty theory, to explain the ready adhesion of the corpuscles in inflammatory blood.] Diluted acids, which make bright blood dark, may do so by making the outer layer of the corpuscles transparent, as they do fibrine before dissolving it; and concentrated solutions of neutral salts may make it bright by making the same layer contract.

*Chemical composition.* M. Figuier‡ has suggested an easy method for the rough analysis of the blood. By adding to one volume of defibrinated blood, two volumes of a solution of sulphate of soda, of sp. gr. marking 16° to 18° in Baume's areometer, the corpuscles will separate (as Berzelius showed), and may, with hardly an exception, be all collected on a filter. Thus their quantity may be estimated, as that of the fibrine may [very roughly] by what is obtained by whipping. The quantity of albumen may be estimated by boiling the serum; and the water, by evaporating a separate portion of blood.

*Ashes.* Enderlin§ has carefully analysed, in Liebig's laboratory, the ashes of the blood. Their solution in hot water formed a very alkaline fluid, which, in all cases, contained alkaline phosphates and sulphates, chloride of sodium, and, sometimes, chlorides of potassium. But, from various tests [which I have repeated, and found exactly true], he proves that—1. The alkaline reaction of the ashes cannot be due to an alkaline carbonate, for both the ashes and the precipitates from their solution by nitrate of silver and chloride of calcium, may be dissolved in acids without the development of gas. 2. The alkaline reaction cannot depend on the presence of caustic alkali; for then the solution could not be, as it is, neutral after the addition of a solution of neutral chloride of calcium. 3. The absence of alkaline carbonates and of carbonate of lime in the ashes of the blood, proves that its albumen cannot be in the form of a salt (albuminate) of soda; and furnishes additional evidence that there are no alkaline salts of lactic, acetic, or fatty acids in the healthy blood; and, lastly, proves that the blood can contain no alkaline carbonate. 4. The alkaline character of the blood-ashes and of the blood itself, must therefore be due to the phosphate of soda; and the presence of the tribasic phosphate of soda in the ashes proves, according to Enderlin, that it must be in the same form (3 NaO., P. 2, O. 5—that of the basic phosphate of soda of earlier chemists,) in the blood itself; for this salt alone remains tribasic after a red heat—the common phosphate of soda would yield pyrophosphate after incineration. He shows also that this view of the alkaline nature of the blood is consistent with the phenomena of respiration, and all other facts: especially, solutions of both the basic phosphates of soda are distinguished, as the serum is, by readiness to absorb large quantities of carbonic acid.

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* Liebig adduces the possibility of extracting iron from dried blood as one of the proofs of its being in an oxydized state; but Mulder says this iron must have been extracted from some other constituent of the blood; for others, besides the globules, even pure serum, contain iron.

† When the blood or its colouring matter has been exposed to the air or prepared in it, the iron must always, according to Liebig's view, be in the state in which he supposes it to be in arterial blood.

‡ Report of the Académie des Sciences du 8 Juillet 1844; and, in full, in the Ann. de Chimie et de Physique, Août, 1844.

§ Annalen der Chemie und Pharmacie, Marz und April, 1844. The same paper contains analyses of the blood-ashes of the calf, ox, sheep, and hare, confirming the above conclusions, and numerous miscellaneous observations on the chemical characters of the proteine-compounds. Other analyses from these papers are reported under the head of Saliva and Fæces. They contain also an analysis of the ashes of ox-flesh, which the author finds identical (in quality) with those of blood, confirming thereby the analyses of Playfair and Böckmann, who found a similar and even closer identity of composition between the complete blood and flesh.

The quantitative analysis of the ashes showed that, in 100 parts from human blood, there are:

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|---|---|
| Tribasic phosphate of soda . . | 22·1 |
| Chloride of sodium . . . | 54·769 |
| ,, potassium . . . | 4·416 |
| Sulphate of soda . . . | 2·461 |
| Phosphate of lime . . . | 3·636 |
| ,, magnesia . . | 0·769 |
| Oxide of iron, with some phosphate of iron . | 10·77 |

It follows from these analyses that the albumen in the blood is not in the form of an albuminate of soda, nor of a combination with carbonate or bicarbonate of soda, but is in combination with the alkaline tribasic phosphate and chloride. The former salt possesses, in a high degree, the power of dissolving proteine-compounds and phosphates of lime; and it is probable, therefore, that it is the solvent of both these constituents of the blood.

*Milky serum.* Dr. A. Buchanan,* by experimental bleedings, has confirmed the fact of the frequent or general occurrence of milky or opaque serum in the blood of healthy persons, after taking food. The serum, he says, becomes turbid about half an hour after taking food: the discoloration increases during several hours, attains its maximum in about six or eight hours (after a full meal by a healthy person), and then becomes gradually clearer, till its limpidity is restored. The opaque serum is generally milk-white, sometimes cream-yellow, or yellowish-brown, like thin oatmeal gruel; or it merely loses its limpidity, and is like weak syrup. It always contains solid white granules, smaller than the blood-corpuscles (spherical or irregular in form) which are suspended in it, and which will rise in a white cream to the surface, either spontaneously or after the fluid has been saturated with common salt. The cream thus obtained is soluble in caustic potash, but insoluble in ether and alcohol; and is considered by Dr. R. D. Thomson as probably a proteine-compound.

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* Transactions of the Glasgow Philosophical Society, March, 1844; Extract in the London and Edinburgh Monthly Journal of Medical Science, July, 1844; and in the Medical Gazette, Oct. 4, 1844. The examinations are confirmatory of Mr. Gulliver's, (Gerber's Anatomy, Appendix, p. 22;) and of the general opinion, that the opacity of the serum is due to the admixture of chyle.

### GENERAL ANATOMY AND PHYSIOLOGY OF THE TISSUES.

*Tendinous tissues.*[*] S. Pappenheim[†] has described the nerves of several of these tissues. In the periosteum, whether covering the shafts or the articular ends of bones, he finds them very numerous, lying especially in the outer surface of the membrane, in company with or upon the arteries, and having terminal loops. In the ligaments, there are nerves, which, after ramifying in the cellular tissues covering them, penetrate with the processes of that cellular tissue, in company with or upon the vessels, into the substance of the ligaments and end in them with plexuses and loops. Nerves may be found in like manner in all capsular ligaments: and it may be expressed, as a general rule, that all ligaments which receive vessels receive also a small number of nerves, though it is but one or two primitive fibres. In tendons, nerves can only sometimes be traced: and Pappenheim has never traced them into human tendons. He supposes that here also the rule of nerves coexisting with arteries may hold; [but here he is wrong, for arteries may be injected in the toughest tendons;] he believes that he has proved the existence of both sympathetic, sensitive, and motor fibres, in all nerves of the fibrous tissues which he has yet examined.

*Serous membranes.* Reichert[‡] describes (what Henle doubted) an epithelium on the interior of the tendinous and sub-cutaneous bursæ, like that lining arteries and the true serous membranes. He has also[§] explained the error of his and Remak's observation of a supposed layer of cells within the epithelium of the blood-vessels.[‖] The appearance is due to the formation of artificial vesicles by the action of water. It is often produced on the surface of serous membranes, gland-ducts, &c.; and is always likely to lead to error.

Valentin[¶] has related some interesting experiments on the properties of animal membranes as *filters.* A solution [or suspension] of albumen so diluted that it appeared a homogeneous fluid under the microscope, when filtered through some horses' pleura previously dried, was separated into a more diluted fluid which passed through, and a more concentrated one which was retained upon the filter. A similar division was similarly effected in pure serum which had been repeatedly filtered through paper. Saline solutions passed through unaltered. [Probably it may be added that different serous membranes filter with different degrees of fineness, and that on this depends the differences of the fluids found in them after death. The fluid of the cerebral ventricles, for example, though having no characters of a true secretion, is peculiar; and, unlike the fluids of other serous membranes, is not tinged when the serum is coloured by madder, and is very rarely discoloured in jaundice. It appears to be a fluid more finely-filtered from the liquor sanguinis. Again, under the increased pressure from congestion, whether passive or active, the filtration of the fluid through the blood-vessels and serous membranes will be less fine: hence the general occurrence of soft jelly-like masses and thin strings of fibrine in the fluid effused in ascites from extreme obstruction of the circulation: hence, also, a probable explanation of what Bischoff[**] has remarked, that the abdominal cavity in rabbits and bitches at the time of heat often contains some pellucid fluid which almost all coagulates when left at rest. These facts also coincide with the observations of Mr. Robinson[††] on the effects of obstruction of the renal circulation in producing effusion of parts of the blood into the urinary tubules: and with some of his recent illustrations[‡‡] of the general effects of the increased lateral pressure of the blood on the walls of the minute vessels].[§§]

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[*] On the Structure of the Fibro-cellular tissue, see Reichert's observations on the description of the nerve-fibres.

[†] Müller's Archiv, 1843, Heft v.

[‡] Ib. 1844. Jahresbericht, p. 229.

[§] Ib. p. 289.

[‖] See Report, 1842, p. 39.

[¶] Lehrbuch der Physiologie des Menschen, Bd. I, p. 601.

[**] Müller's Archiv, 1844, Jahresbericht, p. 120.

[††] Medico-Chirurgical Trans., vol. xxvi, p. 51. See also the similar observations of Dr. H. Mayer, on the Effects of Congestion of the Vessels of the Digestive Canal, in Schmidt's Jahrbucher, Mai 1844.

[‡‡] Medical Gazette, June 28, 1844.

[§§] The observations included in brackets and most of those in the notes are the author's. See, further, Krause's account of Epidermis, with that of the Skin.

*Cuticles,** *Mucus, &c.* Reichert,† from his own and Bidder's observations, denies that the epithelium is ever so shed from the digestive canal, in or after any act of digestion, as to leave any portion of the subjacent mucous membrane uncovered or *raw.* When it has appeared so, the epithelium which remained has probably been washed off after death. In connexion with the same subject are some experiments by Oesterlen‡ which have proved the influence of the layer of mucus which lines the digestive canal, in retarding both the imbibition of fluids inclosed within the canal and their permeation by endosmosis. The passage of fluid into or through the mucous membrane of the intestines was, in many cases, more than twice as rapid when the mucus had been removed as while it was yet adherent.

Mr. Quekett§ has detected a double movement of the ciliæ on the gill-rays of the mussel. Besides their commonly observed curved or lashing movement in a vertical plane, each row presents a slight movement of the ciliæ on themselves, each cilia turning on its own axis through the space of a quarter of a circle, with a movement like that of the *feathering* of an oar in rowing. It is almost certain that without a movement of this kind, it would not be possible for any ciliæ to propel fluid in any determinate direction, or to propel, as they do, separate particles, such as epithelium cells, to which they are attached.

Against the opinion of the transformation of young epithelium-cells into pus-corpuscles in inflammations, Dr. Bühlmann‖ states that in coryza and bronchial catarrh, the discharge of very numerous exudation-corpuscles takes place without ever being preceded by the separation of an unusual quantity of epithelium. Neither can there be found, in the first stages of these diseases, any of those bodies which are supposed to be intermediate between epithelium-cells and pus-corpuscles; nothing more than fully-developed epithelium-cells are to be found scattered in the abundant quantity of exudation-corpuscles; and these latter, as the disease becomes chronic, without any important change in the quantity or character of the cast-off epithelium, gradually passing through the intermediate stage of *mucus corpuscles,* assume the characters of pus-corpuscles.

*Bones.*¶ Dr. Daubeny** has established the truth of the much-doubted†† opinion of Morichini and Berzelius, that fluorine, in the form of fluoride of calcium, is contained in recent as well as fossil bones and teeth. It appears to exist in recent bones in about a quarter of the proportion in which it exists in fossil bones; but the proportions in different specimens of both kinds are variable. The Professor ascribes the failure of those who have not detected the fluorine, except in fossil bones and teeth, to the tenacity with which it is retained by animal matter, and to its being carried off with the carbonic acid evolved at the same time too rapidly to act upon the glass submitted to it. He therefore, before submitting the bones to the action of strong sulphuric acid, burns away all the animal matters, removes the carbonic acid by dissolving them in hydrochloric acid, then throws down the earthy phosphates by caustic ammonia, and dries them.

The experiments have also been fully confirmed and extended by Mr. Middleton,‡‡ who has also detected fluorine in several kinds of deposits from water, and ascribes its comparative abundance in fossil bones (as MM. Gerardin and Preisser did††) to the filtration of water impregnated with it.

*Muscles, structure of.* Dr. F. R. Will§§ maintains that the transverse striæ of the animal muscular fibres are due to the fibrils (which, in their natural relaxed state, are, he believes, uniform and cylindrical,) being thrown, in contraction, into undulations or zig-zag flexures. His arguments for the natural cylindrical form of the filaments are, chiefly, the usual straightness of the longitudinal lines between the fibrils, whether contracted or relaxed; the occasional appearance of unmarked fibrils protruding from the end of a torn fibre; and the frequency of uniform cylindrical filaments in muscle which has been long macerated. And his arguments for the zig-zag condition, or the undulation, to which he ascribes the appearance of transverse striæ, more or less contracted on the fibrils, are the following:

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* See, further, Krause's account of Epidermis with that of the Skin.

† Müller's Archiv, 1844, Jahresbericht, p. 121.

‡ Beiträge zur Physiologie des gesunden und kranken Organismus, Jena, 1843, p, 241, e. s.

§ Medical Gazette, May 3, 1844.

‖ Beit. zur Kennt. der kr. Schleimhaut des Respirationsorgane; Bern. 1843, p. 40.

¶ On the Development of Bone, see the section on Development.

** Philosoph. Magazine, Aug. 1844.

†† See last Report.

‡‡ Philosoph. Mag. July and Oct. 1844.

§§ Müller's Arch. 1843, Heft iv.

1. When the primitive fibres of the muscles recently taken from dying insects, contract under water, the transverse striæ, which at first were wide apart, are approximated; and in every such contraction, the clear as well as the dark transverse lines become narrower, the elevations at the margin of the fibre become more prominent, and the constrictions between them become deeper and narrower. This could not happen if the contraction depended on the formation and widening with flattening of beads, or varicose enlargements of the filaments; for, in this case, the shadows (dark transverse lines), thrown by the beads or enlarged parts, should become broader and more intense as the beads become larger; whereas, in increasing contraction they become more intense and narrower, as the zig-zag angles become more acute

2. The longitudinal striæ separating primitive filaments, remain straight even when the filaments are most contracted; whereas if the filaments become beaded, these lines should indicate that form, in the same manner as it is seen at the edge of the fibre where side views of the zig-zag filaments are obtained.

3 In repeated observations of the muscles of crabs, some of which were partially dried, and others macerated in water, it was found that, in the former, the individual filaments which projected from the torn ends of fibres were, at their extremities, bordered by two perfectly straight lines, which, as they were traced down towards the mass of the fibre, became slightly undulated, then zig-zag in obtuse angles, and then in more and more acute angles, till they could not be recognized as continuous lines. In the macerated muscles, on the contrary, there was scarcely any trace of transverse striæ, and the filaments appeared in almost every part bounded by straight lines.

4. The appearance of transverse striæ, and of rows of spheres may be imitated by thin cylinders of white wax, or a similar substance, moulded in undulations or zig-zag flexures, and examined through a tube as they are held against the light, the angles next the observer appearing darker and broader than those next the light; and the same appearance is produced by the coarsely-undulated surface of many muscles and tendinous tissues.

[This last argument is of little weight; and the facts stated in the first and second are just as well explained by supposing, not that the fibrils present a series of varicose bead-like enlargements, but that they are formed by a series of discs, the lines of union of which make the dark transverse striæ; or, as Mr Erasmus Wilson* has better expressed it, by a linear series of minute cells, flattened at their apposed surfaces, and so compressed longitudinally as to leave no indentation on the surface, thus constituting a uniform cylinder divided by transverse septa, which are formed by the adherent surfaces of contiguous cells. Will's third argument deserves attention; but as the observations were made on dried and macerated fibrils, no conclusion can be safely drawn till they are confirmed by observations on muscles in the natural state.]

Valentin,† who has long described the relaxed muscular fibril as a uniform cylinder, confirms, generally, Will's account, though he cannot determine whether the striated appearance of the fibrils is due to their becoming varicose, or to zig-zag flexures, induced by contraction. He also still holds to his belief ‡ that the fibres and fasciculi in the fully-contracted state are inflected in zig-zag lines, with angles of from 80° to 120°. He mentions, for demonstration of this opinion, his observations on the exposed laryngeal muscles of the frog. His account is almost precisely like that of Hales,* by whom the zig-zag arrangement of fibres was first observed in the abdominal muscles of the frog; and in further evidence of this arrangement being assumed in contractions, he adds, that as often as it is seen (and it may take place seventy-four times in a minute) the small arteries and nerves between the fibres become tortuous (through the approximation of their extremities), and straighten themselves when the contraction ceases.

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* Report of the Royal Society, Philos. Magazine, Aug. 1844. What I have quoted from the description expresses almost exactly what has *appeared* to me to be the structure of the muscular fibril, especially in the large fibres of the eel; except that I doubt greatly whether the component portions of the fibril can be truly called *cells;* they have, rather, the appearance of solid transparent particles. Neither have I ever seen anything to indicate a varying density of the contents in each successive set of four cells such as Mr. Wilson describes: perhaps this appearance was due to the fibres or fibrils being thrown into the coarse zig-zag flexures, described by some as produced in full contraction of the muscle.

† Lehrbuch der Physiologie des Menschen, Bd. ii, p. 33.

‡ See Report for 1842, p. 30.

*Muscles. Force of contraction.* Valentin† has also described a very ingenious *myodynamometer* for testing the force of contraction in the muscles of frogs and other small animals; the force being estimated, not, as in Schwann's experiments by weights in a scale, but by the tension of a bow-spring. From numerous experiments with it he has deduced (besides confirmations of the results of Schwann), 1st. That when, after death, all the irritability has ceased, the muscular fibres tear with a far less weight, that they were previously able, when galvanized, to draw. 2. That by too frequent and rapid irritation the irritability of the muscles is so exhausted, that it is for a time reduced to zero; but that it collects again, though, to a less degree, the longer the animal has been dead, and the oftener its irritability has been exhausted. 3. That by repeated equal irritations, the strength of the muscles (in beheaded frogs) decreases in a regular and corresponding ratio, losing the same amount in each successive period of time. 4. That after tying the femoral artery or vein, or dividing the sciatic nerve (in frogs) the full strength of the muscles remains unaltered for several (in one case as many as twelve) days.

*Rigor mortis.* Dr. Gierlichs‡, of Bonn, has confirmed what I stated in the last Report (p. 6), respecting the rigor mortis of the heart, and the general rule of the rigor mortis setting in as soon as a muscle has ceased to be irritable by stimuli. In frogs, in which the rigor is often not established till three or four days after apparent death, the hind-legs do not become rigid till from six to twelve hours later than the fore-legs; and they were often irritable to galvanism when the fore-legs were already quite rigid. Various means which exhaust muscular irritability, such as poisoning by strychnia or hydrocyanic acid, accelerate the accession of the rigidity. After injections of potash into the blood, the rigor takes place with unusual rapidity, and is very marked. This affords an additional evidence against the notion of the rigidity being dependent on coagulation of the blood or effused liquor sanguinis, for the alkali would retard that process; and a corroborative fact is, that if blood be repeatedly drawn from a dog, and each portion that is abstracted be injected again after the removal of its fibrine, the rigor mortis takes place as usual. No destruction of nerves appears to affect it, unless the muscles have been so long paralytic that their nutrition has been affected. When one of the crural arteries of a frog was tied, the rigor mortis ensued several hours later in the corresponding limb than in the other. Its occurrence bears no apparent relation to the loss of heat.

Valentin,§ also, considers that the rigor mortis may be assumed to affect the involuntary muscles, and relates an experiment to prove its occurrence in the digestive canal. If a portion of intestine from an animal just slain be tied close at one end, and at the other be tied round a graduated tube, and be filled with water, some of which also rises into the tube, it will, after some hours, slowly contract, and, pressing the water from its cavity, will elevate considerably that which is in the tube.

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* Statical Essays, vol. ii, p. 59.

† Physiologie, Bd. ii, pp. 176-92. See, in the section on nerves, the application of similar experiments by Matteucci to determine the force exerted by nerves in exciting muscular contraction.

‡ Medic-Correspondenz-blatt Rheinischer Aerzte, 1843, and Schmidt's Jahrbucher, Mai 1844.

§ Physiologie, Bd. ii, p. 86.

### CIRCULATION.

*Anatomy and Physiology of the Heart.* Kürschner's article in the last published part of Wagner's Handworterbuch* contains all the results of his latest investigation of the actions and anatomy of the heart. The parts which are of most interest from their novelty are briefly as follows: 1. The contraction of an auricle begins at the entrance of the great veins and thence proceeds to the base of the auricle. This is evident, if the auricle, while acting, be looked at *from the side.* 2. The contraction of a ventricle begins simultaneously in every part, the whole cavity draws up uniformly to the origin of the artery: this has hitherto been overlooked because such large hearts have been usually examined, that it was impossible to take in the whole ventricle at a glance; but it is evident when hearts as small as a rabbit's are examined while acting slowly. 3. The auricles never completely empty themselves in their contraction.† 4. If fluid be injected into either side of the heart through any of the great veins, (the other veins being tied and the apex of the heart suspended loosely in its natural position), the apex is always moved backwards as the cavities become fuller. 5. If the injection be made through one of the left pulmonary veins, the apex of the heart, at the same time that it is moved backwards, rotates from left to right; if the injection be made through any of the other veins, the rotation is from right to left. 6. When after filling the cavities, the fluid is drawn back by raising the piston, the heart returns to its previous position, being made to pass through exactly contrary movements, apparently by the elasticity of the tissues disturbed in the previous distension. 7. It is probable, therefore, that the alternate filling and emptying of the heart's cavities during life, which these injections are intended to imitate, contributes materially to its natural movements of receding from the wall of the chest and rotating its apex from right to left in the dilatation of the ventricles, and of tilting forwards and rotating its apex from left to right in their contraction. 8. In the auriculo-ventricular valves [to give only such a general description as may apply to both] one may observe besides their two or three chief divisions or lobes, the arrangement of which is always the same, as many smaller and less regular *intermediate lobes* connecting the adjacent edges of the larger ones. Each chief lobe may be divided into a thicker middle or *nucleus-portion,* and a surrounding thinner and dentated *marginal portion.* 9. The number of fleshy columns projecting from the ventricular wall is always equal to the number of chief divisions of the valve. The tendinous cords attached to the outer surface of each chief division are always derived from two fleshy columns (or in the right ventricle from one column and the septum): the cords attached to each intermediate division or lobe of a valve are all derived from one column. Consequently on each column there are, usually, three groups of tendinous cords, of which the two outer groups belong to the halves of two adjacent chief divisions of the valve, and the middle one to a smaller intermediate division. 10. The tendinous cords may be divided into three classes: namely, *tendons of the first order*, of which two or four, of considerable size, and from different columns, go to the attached margin of each division of the valve, and are there fixed to the muscular tissue of the ventricle; *tendons of the second order*, which are of smaller size, and of which two or three are given from each column (directly or through the medium of one of the first order) to each chief division. They are attached to the outer (or back) surface of the valve in such position that their points of attachment lie in straight lines, which run parallel or slightly converging, from the attachments of the tendons of the first order towards the apex of their division of the valve. Both these kinds of tendons may be seen on looking at the back of the valves: but if any division of a valve be spread out, then much finer *tendons of the third order* come into view, which are given off from the preceding, and are attached to the thin and looser free marginal portions of the division. Their points of attachment to the back of the valve usually lie in straight lines drawn from the tendons of the second order, which give them off, to the very edge of the valve; and their number depends on the breadth of the free marginal portion. Where two divisions of a valve meet at their attached margins a tendon of the first order is always fixed at their point of union, and always gives off tendons of the third order to the adjacent margin of each division; so that when the ventricle contracts the two adjacent divisions must be brought together by the influence of the one set of tendons with which they are both connected. 11. The valves are composed (besides their proper tissue and the endocardium) of the continuations of the tendinous cords which usually spread out like palm-leaves and are interwoven, and of muscular fibres, of which a certain number may be traced, (especially after several days' soaking in cold water), passing from the adjacent wall of the auricle into the interior of each division of the valves, and connecting themselves with the ends of the tendons of the second order in the central portion of the valve. 12. These muscles may be supposed to have the office of keeping the valves tense when, in the contraction of the ventricles, the auriculo-ventricular rings are reduced in size, and the fleshy columns are gradually brought nearer and nearer to each other: but neither they nor the columns can have any share in raising the valves to close the orifice; this must be effected by the blood. When the ventricle contracts the columns contracting with it fix, through the tendons of the first order, the attached margins of the valves; then the blood pressing on their outer surface unfolds them and spreads them before the orifice, into the form of a cone which gradually elongates and becomes narrow, and is flattened as the ventricle empties itself. 13. The purpose of the complicated but regular arrangement of the cords must be to secure the strength of every part of the valve when pressed by the blood. Probably, when unfolded, the dentated edges and the marginal portions are distended and fit into each other. The size also of the valves which appears to be more than enough to close the orifices, reduced as they are in the contracted state of the ventricles, makes it probable that they are not completely unfolded at once in the contraction of the ventricles, but that as the size and position of the ventricle and the size of the orifice change, so different portions are successively unfolded and brought to resist the varying pressure of the blood.

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* A part of the contents of this article [*Herzthatigkeit*] was published before the last year, but not in a connected form, and they are scarcely at all known in England. The description of the valves and their cords is singularly accurate, though, if I may so speak, too diagram-like; and the arrangements are so nearly constant, that they must be of prime importance in securing the due action of the valves. The article contains, also, a good account of all the points discussed concerning the heart's action; and an ingenious theory of it by Kürschner, which is omitted here only because there is not space even for all the facts that should be noticed.

† [The ventricles probably *do* empty themselves. If a heart, in which the contraction of the rigor mortis is very marked, be divided transversely, it will often be found that the opposite inner walls of the left ventricles are in contact, and its cavity completely obliterated; indeed, the form and position of the fleshy columns appear to be specially arranged for this end.]

Valentin* has supplied, by laborious investigations, numerous valuable data for the study of the circulation, and has also confirmed most of those already established by Poiseuille and others. Among his deductions are, 1, that in health the quantity of muscle in the right ventricle of man, many mammalia, and birds, is equal to one half of that in the left; 2, that the quantity in the right auricle is about equal to 2-3ds of that in the left; 3, that the muscular power of the right auricle is to that of the left as the square root of the muscular power of the right ventricle to the square root of that of the left; 4, that, in man and the higher mammalia, the absolute force exerted by the left ventricle is equal to 1-50th of the weight of the body; by the right ventricle equal to 1-100th of the same; 5, that the average quantity of blood discharged by the left ventricle is five ounces [an estimate, for which the examinations are insufficient to establish it as certain, but which agrees much better than the old one of two ounces with the time in which the blood makes the round of the circulation; for, according to this estimate, the blood may all pass through the heart in from 41 3-4ths to 62 2-3ds seconds.] 6. That a pressure equal to that of a column of mercury from 1-12th to 1-3d of an inch is sufficient for the effectual closure of any of the valves; so that even the weakest action of the heart is, probably, enough for it, provided they be healthy.

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* Lehrbuch der Physiologie, Bd. i, pp. 415-30-36-43, &c.

To prove that the impulse of the heart depends [but it can be only chiefly dependent] on the contraction of the ventricular fibres, Valentin* cut off the apex of the heart, in several cases, so that the resistance of the blood and the great vessels and the supposed consequent recoil, were prevented. Yet the tilting movement was observed, as much as when the heart was entire. In evidence, also, that the first sound is due to the tension of the auriculo-ventricular valves, he says, that if a portion of a horse's intestine be tied at one end, be moderately filled with water, *without any admixture of air*, and have a syringe containing water fitted to the other end, the first sound of the heart is exactly imitated by forcing more water in. It may be distinctly heard with the stethoscope applied near the tied end of the intestine, at the instant of the water making it tense.

*Arterial circulation.* Some measurements of arteries for the comparison of the respective areas of trunks and their branches, by Dr. E. Hazard, have been published by Dr. Horner.† The mode of measurement and other circumstances are not stated; but the results are, on the whole, confirmatory of those which I obtained,‡ namely, that generally the joint area of branches is rather greater than the area of their trunk.

Dr. Spengler,§ of Etville, has been making experiments on the force of the current of arterial blood, and its variations in the several acts of the heart and respiration, the results of which give strong confirmation of nearly all those obtained by Poiseuille and others. He has used a new apparatus which is, perhaps, less liable to error than the hæmadynamometer, and which can be so adapted to an artery that the amount of lateral pressure exercised by the blood upon its walls may be ascertained without obstructing the current. He has thus obtained the first experimental evidence of what Dr. T. Young and Weber calculated, and the experiments of Poiseuille made almost certain, namely, that the pressure which the current of blood exercises at any part of the arterial system is equal in all directions.

Valentin‖ also has abundantly confirmed the results of the same experiments; and, from numerous micrometric measurements of the diameters of several arteries and of the thickness of their walls, he concludes, that the thicknesses of the walls of any two systemic arteries are in direct proportion to the square roots of the absolute (*hydrodynamic*) forces under which the blood flows in them; ¶ and that the thickness of the wall of the pulmonary artery is to that of the aorta, as the square root of the force of the right ventricle is to that of the force of the left; i e, as already stated (p. 261) as $\sqrt{1} : \sqrt{2}$.

*Capillary circulation.* Valentin** has estimated the velocity of the capillary circulation in many careful microscopic examinations of frogs' feet during breeding time, and has found the average to be between 1-5th and 1-3d of a Paris line per second; or from ·938 to 1·4 English inch per minute. In the small veins it is about 1-8th faster. [These results agree nearly with those of Hales, who stated the velocity at an inch in a minute and a half: and more nearly still with those of E. H. Weber, who found it 1¼ inch in the minute].

*Venous circulation.* Valentin†† has also, by an apparatus like that used by Poiseuille for estimating the dilatation of the arteries in their pulsation, determined the amounts of the dilatation of the veins near the chest in the act of expiration, and of their contraction in inspiration. In the external jugular vein of the dog the average dilatation is equal to 1-12th of the circumference of the vein.

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* Lehrbuch der Physiologie, Bd. i, p. 427, &c.

† Special Anatomy and Histology, vol. ii, p. 172; Philadelphia, 1843.

‡ Med. Gaz. July 8, 1842.

§ Muller's Archiv, 1844, Heft 1.

‖ Lehrbuch, p. 456.

¶ [If this be true, it will follow, since the hydrodynamic forces in different arteries are directly proportionate to the areas of sections of those arteries, or, to the squares of their diameters, that the thicknesses of the walls will be directly as the diameters: but this appears improbable, although the few measurements made may show that the rule is true for the several parts of the aorta and the innominata.]

** Physiologie, i, p. 468.

†† Ib. p. 501.

the enlargement of the portion of vein (an inch and a quarter in length) which was enclosed in the apparatus, was between 1-10th and 1-11th of its previous dimensions.

*Circulation in the lungs.* Mr. Erichsen,* in an essay to prove that the real cause of death after the sudden introduction of air into the veins, is the difficulty of the passage of frothy blood through the pulmonary capillaries, relates this experiment; a pressure equal to that of from one and a half to two inches of mercury is sufficient to drive bullock's blood, deprived of fibrine, through the capillaries of the lungs of a dog recently killed; but if air be previously blown into the pulmonary artery it will require a pressure equal to that of from three to three and a half inches of mercury to force similar blood through the same set of vessels. The pulmonary circulation being thus arrested, the left ventricle receives an insufficient supply of blood, and respiration ceases in consequence of the defective quantity of arterial blood sent to the nervous centres. But, for some time after respiration has ceased and animal life has nearly ceased, the heart continues to act regularly and forcibly; nor do its right cavities ever become so distended as they are in ordinary asphyxia, unless the air have been forcibly blown into the veins.

## RESPIRATION.

*Respiratory movements.* In a fourth memoir MM. Beau and Maissiat† have completed their account of the respiratory movements.

That which is chiefly interesting (if not accurate) in this as in their former memoirs, is the account of the actions of the muscles. They, first, rightly represent the oblique and transverse muscles of the abdomen acting together in complex respiration, as the expiratory muscles of the abdomen; like the triangularis sterni and intercostals which they regard as the corresponding expiratory muscles of the chest. In the costo-inferior type of respiration, they act by depressing the ribs; in the costo superior, by drawing in the abdominal walls, and pressing the abdominal viscera against the diaphragm; and in very deep and forcible complex expirations in either type, they act in both these ways. The authors further represent the *recti abdominis* as flexors of the thorax on the pelvis; *not* expiratory muscles; and they add that the fibrous transverse septa serve as bonds for the muscular fibres, which, but for them, might often be separated by the eccentric pressure of the abdominal viscera in expiration. The septa are, besides, supposed to be stretched in deep inferior costal inspirations, and to act by their elastic recoil with other elastic parts in the following expiration; [the recti abdominis may have no part in complex expirations in dogs, in whom the authors examined them, and found them tranquil during cries; for, in dogs, they commonly pass straight from the thorax to the pelvis; but in men, in whom these muscles are usually arched forwards, they may be felt contracting in all forcible complex acts of expiration. By their contractions they probably serve in two ways: 1, by straightening themselves so as to reduce the size of the chest and press up the diaphragm through the medium of the abdominal viscera; and 2, by acting, by means of their transverse intersections, upon their own sheaths which they make tense and fitter to afford fixed points for the action of the oblique and transverse muscles. There can hardly be such an elastic contraction of these bands as is assumed; their tissue is not one which would recoil quickly after being stretched, nor is there any of the inspiratory forces (especially among those admitted by the authors) which would be capable of stretching it, in order to its recoiling]. The *sacro spinalis*, *longissimus dorsi*, and *transversalis colli* are described as extensors of the trunk; not expiratory. The *quatratus lumborum* as the continuation of the infra costales; a lateral flexor of the spine; probably not expiratory.

At the end of their memoir, the authors enumerate the several muscles they have described, according to their functions, as follows: [and I have added signs of doubt when their conclusions appear improbable]. *Non-respiratory*—Sacrospinalis, rectus abdominis (?), serratus posticus superior (?), quadratus lumborum. *Doubtful*—Levatores costarum [inspiratory?], serratus posticus inferior [expiratory]. *Inspiratory: directly* and *ordinarily*—Diaphragm and scaleni, the one or the others predominating according to the type of the respiration: *direct* and *extraordinary*—sterno-mastoid, pectoralis minor, lower fourth of the pectoralis major, serratus magnus: *indirect*—trapezius and levator anguli scapulæ. *Expiratory: direct and ordinary*—in forcible expiration, intercostals (?), infracostales, triangularis sterni, latissimus dorsi, transverse and oblique abdominal, pyramidalis: *direct and extraordinary*—upper three-fourths of the pectoralis major: *indirect*—trapezius, sphincter ani, levator ani, coccygeus.

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* Edinb. Med. and Surg. Journal, Jan. 1844.

† Archives Gén. de Médecine, Nov. 1843. See last Report.

*Capacity of respiration.* Many very interesting and practically important results have been obtained by Mr. Hutchinson,* with his *spirometer*, an instrument by which the capacity of respiration is measured by the quantity of air expired in a full and forcible expiration. Among these the chief is the fact of the existence of an intimate relation between this capacity and the height of the individual examined. In 1088 healthy men from five to more than six feet in height, he found the capacities of respiration as follows: in men of 5 feet, 135 cubic inches; of 5 ft. 1 in., 177 c. i.; of 5 ft. 2 in., 173 c. in.; of 5 ft. 3 in., 184 c. i; of 5 ft. 4 in., 193 c. i.; of 5 ft 5 in., 208 c. i.; of 5 ft. 6 in., 204 c. i.; of 5 ft. 7 in., 224 c. i.; of 5 ft. 8 in, 220 c. i.; of 5 ft. 9 in., 229 c. i.; of 5 ft. 10 in., 246 c. i.; of 5 ft. 11 in., 254 c. i.; of 6 ft. 255 c.i.; of upwards of 6 ft. 260 c. i. These numbers are such that it may be generally stated that for every additional inch of height from 5 to 6 feet, eight additional cubic inches of air, at 60°, are given out by a forced expiration. And the results of the examinations are so nearly uniform that disease may be suspected in any man who cannot blow out nearly so many cubic inches as the average of those of the same height, even when, by external measurement, his chest appears to be of full size. Indeed, in general, the size of the chest affords no good indication of the capacity of expiration. The only exceptions among healthy men to the general rule of the direct proportion between the height of the body and the capacity, are in the cases of fat men whose capacity is always low.†

In the ordinary respiration of men, from seventeen to thirty-three years old,‡ Valentin has calculated from the watery vapour contained in the saturated expired air, that the average quantity of air expired in a minute is 400 cubic inches; the extremes, under varying circumstances, being 234 and 686 cubic inches; and the average quantity in one ordinary expiration 31·1 cubic inches, the extremes, in very tranquil and somewhat hurried respiration, being 11·4 and 74 cubic inches. [Mr. Coathupe's estimate of 20 to 25 cubic inches is probably better, for it was drawn from the results of respiration continued during a longer period and with less restraint than those of Valentin's.]

*Force of respiratory movements.* From another set of experiments with an instrument something like a hæmadynamometer with a mouth-piece, Valentin§ deduces that the force exerted in tranquil inspiration and expiration is equal to the pressure of a column of mercury from ·13748 to ·3937 of an inch high; and the force of the same acts when violent is equal to the pressure of a column from ·7874 to 1·5748 high.

Mr. Hutchinson‖ finds that the full expiratory force of a healthy man is generally about 1-3rd greater than his inspiratory force. Taking the general rule, among 1200 persons, of various classes, the inspiratory force increases pretty regularly from those of 5 feet high to those of 5 feet 9 in., and then decreases. If the power of the respiratory muscles be a fair measure of the power of the whole muscular system, the men of this latter height might, therefore, be regarded as the strongest. But in four classes of men picked for active service, Mr. H. found the respiratory force greatest in those of 5 feet 7 in.*

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* Lancet, July 27 and Aug. 3, 1844.

† It was this observation (which has also been made by M. Bourgery, see last Report, p. 11) that thin men have the greatest capacity of respiration, which first led Mr. Hutchinson to the discovery of his law.

‡ Lehrbuch, p. 542.

§ Ib. Bd. i, p. 525.

‖ L. c.

*Changes of the air in respiration.* The whole of this subject has been very carefully examined by Valentin and Brunner,† operating on large quantities of quietly respired air: and their results are probably more nearly deserving of implicit confidence than any hitherto published. They are, briefly, as follows: 1. The expired air has always, (even in widely varying external temperatures), a temperature of from 97·25° to 99·5° F.; most frequently the latter temperature. 2. It is always saturated with watery vapour. The quantity of vapour exhaled from the blood in the air-passages may therefore be estimated by subtracting the quantity contained in the atmospheric air inspired, from the quantity which (at the same barometric pressure) would saturate the same atmospheric air at the temperature of 99·5°. And, on the other hand, if the quantity of watery vapour in the expired air be estimated, the quantity of the air itself may from it be accurately determined, being as much as that quantity of watery vapour would saturate at the ascertained temperature and barometric pressure. 3. The chemical changes are due to the simple diffusion of gases taking place between those of the atmosphere and those of the blood. The nitrogen is unchanged. The volumes of oxygen absorbed and of carbonic acid exhaled from the blood are determined by the established laws of the diffusion of gases, so that for 1 volume of carbonic acid exhaled, 1·17421 volume of oxygen are absorbed;‡ or, by weight, for one part of carbonic acid, 0·85163 of oxygen. Now one part by weight of carbonic acid contains 0·72727 of oxygen; therefore, for each part of carbonic acid which is discharged in respiration there is an excess of 0 12436 of oxygen which enters the blood and is disposed of otherwise than in forming the carbonic acid excreted from the lungs; or, by volumes, for each one of carbonic acid, an excess of 0·17421 of oxygen. Hence, if it be known how much carbonic acid a man has exhaled from the lungs in a given time, we may reckon how much oxygen he has in the same time absorbed. Valentin and Brunner have determined that, in a medium of temperature and atmospheric pressure, they each, on an average of six experiments, breathed 562·929 litres of air in the hour, and each in the same time expired 635·8565 grains of carbonic acid containing 173·414 grains of carbon. From this and from their respective diffusion-volumes the hourly consumption of oxygen may be calculated at 541·5 grains; and these results agree very nearly with those obtained by Andral and Gavarret.§ They show that in each hour 69·0575 grains i. e. 541·5—(635·85—173·414) of oxygen are absorbed which are not employed in forming the carbonic acid of the expired air.‖

But, notwithstanding these exhalations of carbonic acid, M. Boussingault,¶ from 142 analyses of large quantities of the air of Paris, has confirmed the conclusion already generally received, that the quantity of carbonic acid contained in the air of large towns, is not above the average. The average quantity which he found was 3·97 volumes in 10,000. From the quantity of combustibles consumed, in food, fuel, and lighting, in Paris, he estimates the daily produce of carbonic acid at 115,932,871 cubic inches; and the speedy diffusion of such a quantity is not surprising, when it is added that the surface of the ground "within the walls" of Paris measures 1354,229,533 square inches; so that if the whole of the carbonic acid produced in twenty-four hours, were produced in an instant, it would form a layer on the surface less than an inch in thickness.

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* The rules established in these valuable papers are especially applicable to the examination of men for military or other active services. They contain numerous other facts of considerable importance in practice, which, however, can hardly find a place in a report of this kind.

† Lehrbuch, Bd. i, p. 547, e. s.

‡ These numbers represent the proportionate diffusion-volumes of the two gases, calculated according to the law of their being inversely as the square roots of their specific gravities. The results of the experiments were so nearly the same that the differences may be safely referred to errors of analysis.

§ See last Report, p. 11.

‖ The recent observations of M. Gay Lussac (Annales de Chimie et de Physique, Mai, 1844) directed against the experiments of Magnus, only prove inconsistencies in the results of those experiments. It was always sufficiently evident that the *quantities* of gases supposed by Magnus to exist in the blood could not be right; but nothing has disproved either the fact that such gases do exist therein, or the theory that the carbonic acid is formed in the systemic circulation; and if further evidence were necessary, it is abundantly furnished by the results of Valentin and Brunner's experiments, which show that the proportions of carbonic acid and oxygen that are interchanged are determined, not by their chemical equivalents, but by their diffusion-volumes. It is hardly possible that this should happen unless the carbonic acid were already formed and dissolved in the blood when it arrives at the pulmonary capillaries

¶ Ann. de Chimie et de Physique, Mars, 1844, t. 85.

To this it may be added, on the authority of Mulder,[*] that the results, similar to the above, which were obtained by De Saussure, as to the quantity of carbonic acid contained in the atmosphere at various times and places, have been confirmed by Verver, whose experiments, like those of Boussingault, were performed by means of Brunner's aspirator. He says also that he has instituted examinations to determine the quantity of ammonia in the atmosphere, and that it is so extremely small, that it is not possible that plants should derive their nitrogen from it; it is not more important, as a constituent of the atmosphere in its relations to the organic kingdom, than many other of the innumerable substances that are exhaled into the air, and brought down again with the rain.[†]

But if this be true, there must be differences in the quantity of ammonia in the atmosphere of different places, which is very improbable. For Dr. John Davy[‡] has found traces of its presence in several samples of rain-water collected at Ambleside; [and in many fogs in England, it may be detected by the action of the air on slightly reddened and moistened litmus paper. In London fogs it is evident to the nose and eyes; and, as in these, so about Ambleside, it is probably brought down with soot, for Dr. Davy describes a layer of carbonaceous matter, like particles of soot, often covering wide extents of the surfaces of the Westmoreland lakes. Such layers are abundant enough on the surface of water in London; after a night of still frost, great quantities of soot might be swept from the surface of the ice. May we not suppose that the minutely-divided carbon which floats in the atmosphere, is constantly disinfecting it by absorbing not ammonia alone, but many other gases, and holding them in its pores till it falls, or is washed down by rain, and yields them to be decomposed by plants?]

It would be beyond the limits of this Report, to enter far on the subject of the purification of the atmosphere from the changes produced by respiration. It must suffice to refer to the papers of Prof. Draper,[§] Dr. Gardner,[||] and Mr. Hunt,[¶] (especially to that of the first,) on the decomposition of carbonic acid by plants, under the influence of those rays alone of light, which occupy the most luminous part of the spectrum, the orange, *yellow*, and green rays; and to the observations of Wöhler[**] and Morren,[††] on the removal of carbonic acid, and production of oxygen, by certain of the minutest and most abundant infusoria.

### ANIMAL HEAT.

An extensive series of observations has been made by M. Roger[‡‡] on the temperature, of children in health and various diseases.

In nine examinations of infants from one to twenty minutes after birth, the temperature, (observed in these and in all the other cases, in the axilla,) was from 99·95 to 95·45. Immediately after birth the temperature was at the highest; but it quickly fell to near the lowest of those above stated; but, by the next day, it was again completely or nearly what it was before. The rapidity of the pulse and of respiration appeared to have no certain relation to the temperature.

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[*] Physiol. Scheikunde, pp. 113, 160.

[†] Mulder considers that the real source of the nitrogen of plants is in the ammonia formed by the combination of the nitrogen of the moist atmospheric air, contained in the porous earth, with the hydrogen given off from the decaying organic compounds. By a similar process, ammonia is formed by the decomposition of water and atmospheric air in all porous bodies, provided they are moist and exposed to the air at a certain temperature; a similar productinn of ammonia from water and atmospheric air is a part of the process by which nitre is formed in many natural nitre-caves.

[‡] Edinburgh New Philos. Journal, July, 1844.

[§] Philosophical Magazine, Sept. 1843, and many subsequent parts.

[||] American Journal of Science and Arts, Jan. 1844; and Edinb. New Philosoph. Journal, July, 1844.

[¶] Philosoph. Magazine, 1843-4, various parts.

[**] Annalen der Chemie und Pharmacie, Bd. xlv, p. 206; and Schmidt's Jahrbuch. Oct. 1843, Bd. xl.

[††] In Mulder, Physiol. Scheikunde, p. 117; and Ann. de Chim. et de Phys. Sept. 1844.

[‡‡] Arch. Gen. de Médecine, Juillet, Aôut, &c. 1844.

In thirty-three infants of from one to seven days old, the most frequent temperature was 98·6; the average was 98·75; the maximum (in one case only,) 102·2; the minimum, (also observed only once,) 96°·8. All the infants were healthy. The frequency of respiration had no evident or constant relation to the temperature. A few of the infants were of a weakly habit; their average was 97·7, the others were strong, and their average temperature was 99°·534. The age of the infant (in this short period,) had no influence on its temperature; neither had its sex, nor its state of sleep or waking, nor the period after suckling.

In twenty-four children, chiefly boys, from four months to fourteen years old, the most frequent temperature was above 98°·6; the average was 98°·978; the minimum was 98° 15; the maximum 99°·95. The average temperature of those six years old or under, was 98°·798; of those above six years old, 99°·158. The average number of pulsations in the minute was in those under six years old 102; in those above that age 77; yet the temperature of the latter was higher than that of the former, or of younger infants. There was no evident relation between the temperature and the frequency of respiration; nor, in a few examinations, was the temperature affected in a regular way, by active exercise for a short time, or by the stage of digestion.

As already said, in all the examinations from which these results were obtained, the thermometer was held in the axilla; comparative examinations proved that the temperature of the axilla, (though lower than that of internal organs,) was higher than that of any other part of the surface of the skin. Of the other parts examined, the warmest was the abdomen, then in succession, the cavity of the mouth, the bend of the arm, the hands, the feet; of which last, the average temperature, in four examinations was only 87°·35. (These results correspond sufficiently with those obtained by Dr. John Davy.)

In diseased states, (to the illustration of which the greater part of the memoir is devoted,) the temperature of the skin in children may descend to 74°·3, and may ascend to 108°·5. Its range of variation is therefore much greater than in adults, in whom M. Andral found it to vary in different diseases not more than from 95° to 107°·6.

Dr. John Davy* also has contributed some miscellaneous observations on animal heat. They were made with a thermometer placed beneath the tongue. In eight old men and women, all, with one exception, between eighty-seven and ninety-five years of age, the temperature was 98° or 98°·5; therefore not below the average of persons in the like circumstances. But, two observations showed, that in exposure to external cold, the temperature was more reduced than in young persons, in one case to 95°, in the other to 96°·5. A few observations were also made on persons working in rooms at a temperature of 92°; in one case the temperature under the tongue was 100°, in another 100°·5; and in a third, with an external temperature of 73°, it was 99°. The same slight variations of the temperature of superficial parts in accordance with changes of external temperature were shown by repeated observations on a healthy man in the different seasons at Constantinople. By moderate exercise the temperature was raised, (but not above the general average,) on the surface of the extremities, and was not affected in the internal parts.

Some very interesting observations on the effects of hot moist air upon the body were made by M. Constantin James,† at the baths or stoves of Nero, called formerly Posidianæ, near Pozzuoli. The physiological part of his account is, that he had first to traverse a passage, leading to the hot springs, about seven feet high, and three wide, in which the temperature in the upper strata of air was 104°F. in the lower 91°·4. After going along this for about fifty yards, the passage narrowing and winding, the temperature in the different strata became 109°·4, and

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* Philosophical Transactions, 1844, p. 57.

† Gazette Medicale, 27 Avril, 1844.

98° 6, and was very inconvenient; his pulse increased from 70° to 90 times in the minute. After a few instants, as he went on, his pulse became 120°, his temporal arteries beat forcibly, his respiration was short and panting, his body bedewed with sweat; he was obliged to stop every instant, and put his head to the ground, where he could breathe the least heated air. The temperature had now become 118°·4 in the upper, and 111°·4 in the lower strata, and the atmosphere was filled with dense vapour. Still descending towards the spring, the atmosphere became still more suffocating; his head felt bursting; he was utterly exhausted, and had nearly lost his consciousness; his pulse could not be counted. The temperature of the spring was 185°, while that of the atmosphere was 122°. Summoning all his strength, the experimenter made his way back through the passage, in which he had been for nearly a quarter of an hour, and of which the whole length was about 120 yards. On coming into the cold air he nearly fainted, and staggered like one drunk, till he was relieved by bleeding at the nose; but through the evening his pulse was 100, he was feverish, had ringings of the ears, and a kind of creeping in the limbs. After a good night's rest he was completely recovered. The water from the spring was clear, and not charged with any gas; neither was any deleterious gas mingled with the heated air.

M. James compares these observations with those made on rabbits and other animals, by M. Magendie. The chief results of these experiments were as follows: two rabbits, of the normal temperature of about 102°·2 were placed in two stoves, one at 212°, the other at 140°; the first died sooner than the second, but the temperature of each at the instant of death was the same, namely 111·2°. And the same experiment often repeated, showed that whatever were the ratio at which the heat was applied, the animal died when this increase of nine degrees was attained. In bird's whose normal temperature [in some,] is 111° 2, i.e. the same as that at which mammals die, death ensues upon the same increase of nine degrees of temperature; they die when their blood is at 120°·2.

If when an animal is near dying from the effect of heat, an artery be opened, its blood is as black as that of a vein, it does not coagulate, and does not become bright on exposure. Exposed to dry heat, the animal loses much weight by evaporation before it dies; exposed to moist heat it loses no weight, but dies sooner. In the vapour-baths of Nero, M. James was almost suffocated in a temperature of 112°, while in those of Testaccio, in which the air is dry, he was but little discomforted by a temperature of 176°; and this has been confirmed on many animals. The quantity of weight lost by evaporation in hot dry air is directly proportionate, not to the temperature, but to the duration of the exposure, and the rate of loss is the same during all the times. After death, the lungs and heart are found in the contrary state to that seen after death from cold; they are empty from blood, and it is collected and extravasated at the surface of the body.

## DIGESTION.

*Saliva.* From analyses, conducted on the same plan as those of the blood, (page 254), Enderlin[*] concludes that the saliva, like the blood, contains no lactate, carbonate, or acetate; but that its alkaline reaction is due to tribasic phosphate of soda, which serves also as the solvent of the mucus- and proteine-compounds. The analysis of the ashes obtained from a very large quantity afforded, in 100 parts:

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|---|---|
| Tribasic phosphate of soda (3 Na. O, P 2, O 5) . . | 28·122 |
| Chlorides of sodium and potassium . . . | 61·93 |
| Sulphate of soda . . . . . . | 2·315 |
| Phosphate of lime<br>,, magnesia<br>,, iron | 5·509 |

He believes, from this, that the saliva must take a very important part in digestion.

And it is but reasonable to connect these discoveries of the basic phosphate of the saliva and the acid phosphate of the gastric fluid with the fact observed by Schultz and Lehmann, and more clearly by Dr. Wright, (see last Report, p. 12, and Lancet, 1842-3,) that the alkalinity of the saliva bears a direct proportion to the acidity of the gastric secretion. The observations made this year upon the relations of the phosphate salts in physiology may, probably, be regarded as the most promising of the year's discoveries.

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[*] Annalen der Chemie und Pharmacie, Marz 1844.

*Palate.* A very excellent and comprehensive dissertation on the nerves of the palate has appeared from Dr. Hein.[*] The conclusions of numerous experiments (which will be referred to again in the Report on the Nerves), were in many respects similar to those of Volkmann. The soft palate is supplied by four nerves. The mucous membrane of the anterior and upper surface and the subjacent glands receive sensitive filaments from the posterior palatine nerves of the second division of the trigeminus. The lower part of the anterior surface, and the surface of the anterior arch, are supplied by gustatory branches of the glosso-pharyngeal, which also gives gustatory branches to the middle part of the lower region. The whole posterior surface and posterior arch receive sensitive fibres from the pneumogastric and accessory. The second division of the trigeminus also sends filaments (by the middle palatine nerve) to the levator and azygos muscles; but these are probably centripetal nerves. Of the muscles, the tensor and azygos receive (besides these centripetal fibres) motor fibres from the pneumogastric and accessory; the tensor receives fibres of both kinds from the otic ganglion, and, probably, the internal pterygoid branch of the third division of the trigeminus: the palato-glossus is similarly supplied with both kinds of fibres by the glosso-pharyngeal, and the palato-pharyngeus by the pneumogastric and accessory. The stylo-pharyngeus is supplied by the glosso-pharyngeal.

*Œsophagus.* Two new muscles connected with the œsophagus are described by Professor Hyrtl[†] of Prague, [and I can bear witness to at least the general truth of his description ] One serving, perhaps, to diminish the movement of the left bronchus when the food passes it,) is connected by a broad base with the posterior wall of the bronchus. and thence extends to the left wall of the œsophagus, and mingles with its longitudinal fibres, continuing two or three inches with them. The other (for fixing the œsophagus below the point where it crosses the bronchus,) takes its origin from the left wall of the posterior mediastinum behind the aorta, over which it turns to reach the œsophagus. The first muscle is named by him broncho-œsophageal, the second pleuro-œsophageal.

## STOMACH.

*Gastric digestion.* A very extended examination of the phenomena of gastric digestion has been made by M. Blondlot.[‡] The chief subject of experiment was a dog, in which he maintained, without affecting the health, a fistulous opening into the stomach for more than two years. His examinations have furnished many new and important facts, and have confirmed those of Dr. Beaumont made on Alexis St. Martin in nearly every point.

*Secretion of the gastric fluid.* Like Dr. Beaumont, he has found that no mechanical irritation of the interior of the stomach will produce a secretion of nearly so much or so pure gastric fluid as the introduction of food. By mechanical irritation he could never obtain more than 180 grains of fluid, and this was mixed with mucus: when food was introduced, the gastric mucous membrane immediately became turgid, and yielded ten times as much digestive fluid pure. In this turgid state, also, both these observers agree that the mechanical irritation, which was ineffectual under other circumstances, greatly increased the secretion of the gastric fluid. In the turgid state, moreover, chemical irritation, such as was produced by putting pepper, salt, sugar, &c. on the food, produced a still greater effect than mechanical irritation did; and so did alkalies, but acids seemed to have a contrary influence. The act of digestion and of secreting gastric fluid was not, in either set of observations, found to be attended by an increase of the temperature of the stomach. The statement of Dr. Beaumont is also confirmed, that, cæteris paribus, the quantity of gastric fluid secreted is directly proportionate to the quantity of food taken, provided that quantity, however great, is not more than the organism requires; and the quantity secreted appears to bear a close relation to the degree in which the food taken is digestible or the contrary.

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[*] Müller's Archiv, Heft iii, iv, an inaugural prize essay; Heidelberg.

[†] Wigner Zeitschr. i, ii, 1844; and Schmidt's Jahrbucher, Sept. 1844.

[‡] Traité Analytique de la Digestion, 8vo; Paris, 1844. Of course so novel a mode of experimenting has been imitated. M. Payen and Dr. Basson (Froriep's N. Notizen, Feb. 1844) have published the results of their experiments; but there is nothing in them which has not been long known.

Its quantity is also apparently influenced by impressions made on the mouth: e. g sugar introduced into the dog's stomach, either alone or mixed with human saliva, excited a very small secretion; but when the dog had himself masticated and swallowed it, the secretion was abundant.

Some strange experiments on the secretion of the stomach are also related by M. Claude Bernard.* The results of the strangest are these:† 1. The mucous membrane of the stomach, during fasting, is not alkaline nor neutral: if the mucus be wiped off it, it gives an acid reaction. 2. Its acidity, even during digestion, is quite superficial; if a part of its surface be scraped, the acidity of that part disappears. 3. It is acid, even in the young fœtus ‡ 4. If arterial blood, just drawn from one dog, be injected into the coronary artery of the stomach of another, just killed, and having the stomach laid open, there will gradually ooze from the gastric mucous membrane a transparent dew-like fluid, with an acid reaction. If a small quantity of ferrocyanuret of potassium have been added to the blood, it also will be detected in the oozing fluid. 5. A dog was well fed; half an ounce of weak solution of ferrocyanuret of potassium was injected into its jugular vein, and half an hour after, (having fed again in the interval,) it was killed. The partially-digested food in the stomach, and the internal surface of the stomach, struck a blue colour on the contact of a solution of salt of iron; but, with the exception of the urine, no one other fluid, whether secreted or exhaled, and no tissue of the body afforded a similar indication of the presence of any of the injected salt. (?) 6. If the same salt be injected into the blood of a fasting animal, it is not effused into the stomach. 7. If ferrocyanuret of potassium be injected into one jugular vein of a dog, and protosulphuret of iron into the other, they do not appear to unite in the blood, nor in any tissue or organ [or fluid?] of the body, except the gastric fluid: the partially-digested food in the stomach is the only thing that is coloured blue. (?) 8. If lactic, phosphoric, butyric, or acetic acid be injected into the blood, it is found in the stomach. 9. If alkaline solutions of magnesia and iron be so injected, those bases are never found in the gastric fluid. 10. If salts—such as lactate of iron, or butyrate of iron or magnesia—be injected, the acids are found in the gastric fluid, and the bases pass into the urine. If cyanuret of mercury be injected, hydrocyanic acid is smelt in the stomach, but the mercury is never found in it. 11. If a mineral salt which cannot be decomposed in the blood be injected, it passes entire into the stomach: e. g. the ferrocyanuret of potassium and protosulphate of iron.

*Analysis and properties of the gastric fluid.* The most remarkable results of M. Blondlot's investigations relate to the composition of the gastric fluid, and different as his conclusions may be from those usually received, yet the large quantity of fluid he was enabled to collect in a purer state than any one hitherto has collected it, entitles his account to every consideration. He very carefully distilled on a sand-bath 3875 grains of pure gastric fluid obtained after feeding his dog with raw meat; he repeated the distillation, and repeated the whole experiment, several times, with the gastric fluid of other animals as well as of the same dog, and the constant result was, that the product of the distillation did not once exhibit the slightest acid reaction; but the residue in the retort was always strongly acid. It was thus proved that the acid of the gastric fluid cannot be either the hydrochloric or the acetic, for both these are volatile at the boiling point of water, and would have distilled over.

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* Gazette Médicale, Mars 16, 1844.

† Part only are quoted, and many of these need confirmation. None of the author's deductions are mentioned; for these are adapted to the opinion that the gastric mucous membrane has no glands, except such crypts as are found in the intestines, and that it has villi identical in structure with those of the intestine. The experiments which are here omitted are explicable by physiological facts, familiarly known in most parts of Europe, but which the author, assistant to M. Magendie, appears not to have heard of.

‡ M. Bernard says he found it acid in a human fetus of about seven weeks; but the separation of the stomach from the rest of the digestive canal does not begin till after two months. Perhaps, he means seven months.

A further proof that it is neither of these nor lactic acid, was furnished by the fact that no effervescence is produced when chalk, marble, or any other carbonate of lime is added to the gastric fluid; and it was this fact which chiefly led M. Blondlot to his conclusion, that the true and almost only source of the acidity of healthy gastric fluid is the presence of superphosphate and biphosphate of lime. The evidence which he gives in addition to the above is: 1st, there is no acid salt, except this super-phosphate of lime which could retain its acidity and remain in contact with carbonate of lime without exciting decomposition; 2d, sulphuric acid, added to gastric fluid, produces an abundant precipitate of sulphate of lime, and oxalic acid a similar one of oxalate of lime. 3. Potash, soda, ammonia, and lime-water, produce abundant precipitates of neutral phosphate of lime. 4. The calcined ash of gastric fluid was not deliquescent, was dissolved without effervescence by a few drops of hydrochloric acid, with which it formed chloride of calcium; it had, therefore, contained neutral phosphate of lime, the excess of the acid having been decomposed in the calcination.

The general conclusion of his analysis is, that the gastric fluid is composed of ninety-nine parts of water, with one part of super-phosphate of lime, super-phosphate of ammonia, chloride of sodium, mucus, an aromatic, and a peculiar, principle. Similar results were obtained from the analysis of the gastric fluid of several animals.

For further evidence that the acid reaction of the gastric fluid depends on these acid phosphate salts alone, M. Blondlot has completely examined the question whether, during healthy digestion, lactic acid is ever formed by transformation of the food in the stomach. His conclusion is that neither it, nor a transformation of sugar into starch, nor any kind of fermentation takes place. He has often analysed the fluid expressed from food which had remained for various lengths of time in the stomach, and never found the least trace of lactic acid; and the reason he assigns for its absence is, that the acid of the gastric fluid prevents it, just as other acids prevent the lactic fermentation from taking place in a solution of sugar, provided they are present in proportion sufficient to give the solution a degree of acidity equal to that which it would acquire if the lactic acid were formed in it. In confirmation of this he shows, by numerous experiments on ruminants and birds, that lactic acid is formed by the transformation of the sugar of their food in all those parts of the digestive canal in which the food is delayed without the presence of an acid; namely, in the first and second stomach of ruminants, the crops of birds, and the cœcum of man and other animals. He first proves that the acidity often observed in the food taken from these cavities is not due to any secretion from their walls. He fed, for four days each, sixteen sheep and goats, and several pigeons and chickens with different kinds of food containing no sugar; and in every instance the portions of food which were found after twelve hours fasting, in the first stomach, or the crop, were not acid, but alkaline, proving that the walls of these cavities secrete an alkaline fluid. On the other hand, when, the other circumstances being the same, as many ruminants and fowls were fed on food containing sugar, the portions of food found in the same cavities were always acid, and, in the case in which they were analysed, the acid obtained was the lactic.

In regard to the cæcum he states that its contents are never more acid than those of the small intestines, except when the animals examined have had sugar in their food; from which, and the absence of any proof that the cœcum secretes an acid fluid, he believes that the acidity often found is due to a portion of the sugar of the food which has not been absorbed, and has undergone the lactic acid fermentation in the cæcum.*

These experiments are confirmed also by those of Mr. Ross,† who finds that rabbits fed on farinaceous food have lactic acid in their small intestines, though it is not found in their stomachs. They appear to be contradicted by those of Tiedemann and Gmelin, who found acid in the crop of a pigeon which had fed for several days on nothing but meat: but M. Blondlot shows that this acid had probably flowed from the stomach into the crop after death; an accident which happened in his experiments when means were not used to prevent it.

Besides these experiments concerning the chemical properties of the gastric fluid, M. Blondlot relates others, which add to the evidence already known, that the real digestive property of the fluid depends, not on its obvious chemical qualities, but on an organic principle. If exposed to a temperature between 104° and 122° F. or higher, it entirely and irrecoverably loses its digestive powers, although apparently, and as to analysis, unchanged. Kept from the air, the gastric fluid retains its active properties for at least two years; but, exposed to the air and a moderate temperature, it putrefies in five or six days, although the chyme which it forms from nitrogenous organic substances may be preserved for two or three months without apparent change. The precipitation of all the lime which it contains does not affect its activity; neither are its chlorides indispensable; but whatever much alters its organic constituents, (such as heat, strong alcohol, or strong acids,) or removes them, (such as animal charcoal, tannic acid, chlorine, or acetate of lead,) destroys all the digestive properties.

*Digestive properties of the gastric fluid.* Some singular evidence of these is furnished by MM. Bernard and Barreswill‡ who have found that nutritive substances injected in simple aqueous solution into the blood are not assimilated: but are assimilated if dissolved by the aid of the gastric fluid. Among other experiments are these: portions of cane sugar, albumen, and gelatine, seven and a half grains of each, and severally dissolved in water, were injected into the jugular veins of three dogs. Three hours after, the urine of each was examined, and in each the injected substance was found. Under other similar conditions, the same quantities of the same substances dissolved in gastric fluid were injected, and three hours after, gelatine was detected in the urine of the dog into whom it had been injected, but not a trace of albumen or sugar in the urine of either of the others. Three dogs were then fed exclusively and respectively on gelatine, albumen, and sugar; and the first alone could ever be detected in the urine. The authors fed themselves in the same way and obtained the same result; and they conclude (as others presently to be mentioned do) that gelatine is not assimilable and therefore not nutritive.

Among the experiments which M. Blondlot§ made to determine the mode in which the gastric fluid, in or out of the stomach, acts on different animal substances some afforded novel and interesting results: A. He shows that coagulated albumen owes its long resistance to the digestive fluid only to its compact form. When coagulated in very fine particles (as by pouring white of egg beaten into a froth, into boiling water) it is digested as quickly as soft fibrine. B. He adds further evidence that the action of the stomach in coagulating milk is not due peculiarly to its digestive principle, but to its acid, which acts like the lactic acid developed from the sugar under the influence of rennet or any other decomposing azotized compound. C. The effect of the gastric fluid on bones, observed both on the bones in their entire state, and on their animal and inorganic constituents separately, is, that, first, it very slowly disintegrates the animal matter, attacking them from the surface, and then, also very slowly, disintegrates and reduces the earthy matter into a fine chalky powder, but without either dissolving or decom-

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Traité Analytique de la Digestion, pp. 91-104. † Lancet. Jan. 20 and Feb. 10, 1844.

Gazette Médicale, 27 Avril, 1844; Report from the Acad. des Sciences, seance du 22 Avril, 1844.

Loc. cit. pp. 254-383, &c.

posing it. The earthy matter not being dissolved proves that no hydrochloric acid had acted upon it: and in its minutely divided state it all passes through the intestines and is discharged with the fæces.

The results of many more of his experiments of this kind are interesting. They confirm Mr. Beaumont's, and appeared to M. Blondlot to show that, of all the simple alimentary substances, those which are fluid at the ordinary temperature of the stomach, and those which are easily soluble (in the ordinary manner of solution) in its secretion, such as fluid albumen, sugar, gum, pectine, &c., are at once absorbed by the veins; and that others, which are not liquid nor easily soluble, such as fibrine, coagulated vegetable and animal albumen, caseine, gelatine, &c., are, in only a very small proportion, if at all, dissolved, the action of the gastric fluid on them being limited to the softening of them, so that they are reduced into very minute particles which (out of the stomach) appear like a very fine precipitate. The same general rule is said to be observed in the digestion of the compound alimentary substances, both animal and vegetable; the fluid and easily soluble parts cannot be said to be digested, for they are at once absorbed by the stomach; the rest are softened and reduced into very minute particles, which are carried into the intestines, without any change in their chemical constitution, and are, in this state, absorbed by open mouths of the lacteals, visible with the naked eye, at the extremities of the villi. (!) This act of softening is, in some cases, due merely to the acid of the gastric fluid; e. g. in the case of parenchymatous tissues, and succulent fruits and roots, which are similarly softened, at the same temperature, in acidulated water; in the cases of fibrine, coagulated albumen, &c., it is the effect of the *peculiar* mode of action of the gastric fluid.

In any case, chymification is, in M. Blondlot's opinion, no *solution*, but a *division* of the aliment; it undergoes no kind of decomposition.

*Influence of the pneumogastric nerves upon digestion.* M. Bernard* has instituted fresh experiments to determine this still-debated question, making use of the artificial fistulous openings into the stomach, invented by M. Blondlot. A dog's digestion had been thus watched for eight days, and had always been well effected. On the ninth day, after a day's fast, M. Bernard sponged out the stomach, which contracted on the contact of the sponge, and at once secreted a large quantity of gastric fluid; he then divided the pneumogastric nerves in the middle of the neck, and immediately the mucous membrane, which had been turgid, became pale, as if exsanguine, its movements ceased, the secretion of gastric fluid was instantaneously put a stop to, and a quantity of ropy neutral mucus was soon produced in its place. After this, no digestion was duly performed, and milk was no longer coagulated; raw meat remained unchanged, and the food (meat, milk, bread, and sugar, which the dog had before thoroughly digested) remained for a long time neutral, and at last acquired acidity only from its own transformation into lactic acid. In the stomachs of other dogs after the division of the nerves he traced the transformation of cane-sugar into grape-sugar in three or four hours; and in ten or twelve hours the transformation into lactic acid was complete. In others, when the food was not capable of an acid transformation, it remained neutral to the last. In no case did any part of the food pass through the peculiar changes of chymification. In a last experiment, he gave to each of two dogs, in one of which he had cut the nerves, a dose of emulsine and half an hour after, a dose of amygdaline (substances which are innocent alone, but when mixed produce hydrocyanic acid). The dog, whose nerves were cut, died in a quarter of an hour, the substances being absorbed unaltered and mixing in the blood: in the other, the emulsine was changed by the action of the gastric fluid before the amygdaline was administered, and it survived.

*Act of vomiting.* A case is related by M. Lepine† of Châlons sur Saône, proving the partial influence of the stomach in vomiting. The patient's abdomen was torn open by a horn, and the stomach was wholly protruded. For half an hour it was seen repeatedly and forcibly contracting itself, till by its own efforts it expelled all its contents except the gases.

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* Gazette Médicale, Juin 1, 1844; from the Report of the Acad. des Sciences, seance du 27 Mai, 1844.

† Bulletin de l'Académie de Médecine.

Mr. Anderson,* to prove that the diaphragm is not, as Dr. Marshall Hall supposes, inactive in vomiting, gave tartar emetic to two dogs, and, when sickness commenced, he opened the trachea, and at the same time introduced his finger into the abdomen so as to feel the state of the diaphragm. During each effort of vomiting, the diaphragm became tense and rigid, and descended towards the abdomen.

[But neither these nor any other experiments prove that the diaphragm actively compresses the stomach in vomiting, by descending towards the abdominal cavity. Indeed no experiments in which the trachea is opened, can illustrate the action of the diaphragm when, as in vomiting, the glottis is closed; for, in the former case, the diaphragm is free to move either way; in the latter, it cannot move at all without either expanding or compressing the air in the lungs. The true explanation of the act of vomiting must, I think, be intermediate between that which supposes the diaphragm to be one of the muscles actively compressing the stomach, and that which supposes it to be inert. The inspiration which usually precedes the act of vomiting is terminated by the closure of the glottis; after this the diaphragm cannot descend further, except by expanding the air in the lungs, but it remains fixed in its position, and serves as an unyielding surface against which the stomach may be pressed by the contracting abdominal muscles. This position of the diaphragm might be nearly maintained, though it were relaxed, for, if the glottis remained shut, the diaphragm could not be raised except by compressing the air in the lungs. But Mr. Anderson's experiments, as well as several other facts, make it more probable that the diaphragm continues in the act of contraction; or rather, since in his experiments it descended when the trachea is open, we may conclude that when the trachea and glottis are shut, it would not descend, but would remain, as other muscles often do, in the rigid and resisting state of contraction, so as to afford a completely fixed and firm surface for the stomach to be compressed against. And this continuance of the contracted state is proved by rupture of the diaphragm in vomiting, for this rupture is not from over extension of the whole muscle, but from some of the fibres or parts of fibres contracting so vigorously as to tear others which are contracting less or not at all.

A condition essential to vomiting, but not sufficiently considered, is the relaxation of those oblique fibres of the stomach, which like a sphincter embrace the cardia. Unless it be relaxed, no vomiting can take place; for when contracted, they can as well resist all the force of the contracting expiratory muscles as the muscles of the glottis can resist it in the act of straining. The activity of the stomach in M. Lepine's case shows that its movements may be associated with those of the abdominal muscles; and, probably just as coughing, sneezing, &c., are perfect when the relaxation of the muscles which closed the glottis is exactly coincident with the contractions of the expiratory muscles, so is vomiting perfect when in exact coincidence with the same contractions the oblique fibres of the cardia are relaxed.]

### LIVER.

*Structure.* Some valuable papers on this subject have appeared from Müller,† E H. Weber,† and Dr. Kronenberg,† the general effect of which, (though those of the last two are written with an opposite intention,) is to confirm in a remarkable degree the description by Mr. Kiernan. The amounts given by Weber and Kronenberg, though written independently, are in almost everything alike. Especially, they agree with Mr. Kiernan in describing the hepatic ducts as commencing in very fine networks, which, they add, are interlaced with the capillary networks between the portal and hepatic veins. They demonstrate these networks in both the uninjected and the injected state. E. H. Weber's account is that the blood capillaries are from 1-1463th to 1-1959th of an inch in diameter, forming a solid uniform network, with meshes not wider than the vessels themselves; and that the distance through which blood has to pass from the smallest portal to the smallest hepatic veins is from about 1-70th to 1-80th of an inch. The meshes of the blood-capillary network are occupied by the interlacing network of hepatic ducts. These are smaller than any other gland ducts yet known, being from 1-900th to 1-1340th of an inch in diameter, and have no capillaries on their walls. Their network extends uniformly, and without any division according to lobules, through the whole substance of the liver, and its meshes are very small. There is no anastomosis between the blood-vessels and the ducts; but they are in contact on every side, each filling up the meshes of the network formed by the others, and both together filling every space, and forming the whole substance of the liver, except when large vessels, nerves, &c. run into it.

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* London and Edinb. Monthly Journal of Medical Science, Jan., Feb., March, &c. 1844.

† Müller's Archiv, 1844, Heft iii.

Full accounts are given of the modes in which the demonstration of these things are obtained. Among them are injections (of necessity only very partial) of the bile-ducts; and these demonstrate, according to Weber, another form of bile-ducts, which are found imperfectly developed on the surface of the transverse and longitudinal fissures, the edges of the gall-bladder, and especially (as Mr. Kiernan also showed) at the connexion of the left lobe and the left lateral ligament. In these parts are networks of comparatively large branches of ducts, beset by cells, and having many branched appendages, which terminate in closed ends filled by cells, and which Weber names *vasa aberrantia* of the liver.

[It does not appear that Weber and Kronenberg have made more complete injections of the hepatic-duct plexuses than Mr. Kiernan did, whose demonstration of this arrangement, so far as injections are concerned in it, is as satisfactory as theirs; for all confess the injections to have been very partial. The chief new evidence for this mode of arrangement is afforded by the microscopic examination of the uninjected ducts I had a fortunate opportunity for confirming, to some extent, the account already given, in examining parts of a liver last summer, from a case of intense jaundice. The case was of a kind not very unfrequent, in which jaundiced persons die with coma or delirium, and other rapidly supervening signs of cerebral disturbance, and in which, after death, the liver is found pale, or orange-coloured, small, soft, but tough, generally or in most parts nearly bloodless, and with the minutest bile-ducts, in some parts, gorged with bile, although the large ones are not closed nor apparently obstructed; so that sometimes parts of the liver stand out from the rest, of a deep orange or olive colour. In this case, the distended ducts were easily traceable in thin sections of the liver, with a single lens of 1-10th inch focus; and they appeared tortuous, and freely anastomosing, so as to form an irregular network with very small meshes. They appeared filled, not with fluid bile, but with bile-cells; and these, as seen with a higher power, were all pale yellow, and spotted here and there with brilliant yellow points and granules; in some also the nuclei appeared peculiarly bright yellow.]

The chief point in which these accounts differ from Mr. Kiernan's is in denying that the component parts of the liver are arranged in lobules. This has also been denied by Henle and Mr. Bowman, who agree with Weber and Kronenberg in describing the capillary networks as *solid*, (i. e. extending uniformly through the liver.) They also all deny the existence of any fibro-cellular partitions dividing the liver into lobules, and even the existence of more fibro-cellular tissue than serves to invest the larger vessels, &c. of the liver. They deny also that there are any such *interlobular* veins and fissures as Mr. Kiernan described, and state that the smaller branches of these veins communicate by branches only just larger, if at all larger, than capillaries.

Müller's paper is written chiefly for the purpose of maintaining the old view of the lobular arrangement of the liver, and contains many facts which had long appeared to me to afford satisfactory evidence of its truth. He justly observes that the complete injections of the blood-capillaries, on which the objections to the lobular arrangement of the larger vessels are founded, are not the best preparations for demonstrating the distribution of the larger vessels, since these are sure to be concealed by the full capillaries. In less complete injections, they may be traced, as Mr. Kiernan describes them, though not usually with that stiff uniformity in which, for clearness' sake, they are represented in his diagrams. But, without injections, the lobular divisions of the liver may be seen, especially in the pig's liver, in which, as Müller exactly describes it, the whole natural surface, as well as the surface of every secretion, is marked by white lines inclosing angular spaces, which lines are no arteries (as they are supposed by Kronenberg), but the ends of membranous septa of cellular tissue, which form distinct capsules round each lobule, and, altogether, divide the whole liver into minute spaces, so that when the glandular substance inclosed within these capsules is scraped away, they remain like a fine honeycomb, composed of oval cells, about a line in length, and half a line wide. [The general truth of this description can be easily seen in the pig's liver, and traces of the same arrangement in the human liver. The only point in which I think Müller is wrong is in describing the partitions as formed of fibro-cellular tissue. If one be cut from the interior of the liver, it will be found covered on both sides with hepatic cells and granules, which adhere to it much more firmly than those in the interior of the lobule do to one another. When these are scraped off, there remains a very thin and tough membrane, in which there are only a few filaments of fibro-cellular tissue, and which appears to be composed of a very dense network or networks of vessels, with gland-cells still adhering among them. The appearances presented in the pig's liver are such as to indicate that its lobules are by no means generally or uniformly traversed by plexuses of ducts; in their interior they appear to contain only large nucleated biliary cells, with various granules loosely arranged: the ducts appear only in the walls of the lobules.]

Müller adds to these evidences, that, if portions of liver be macerated for eight days in vinegar, the lobules may be easily separated from each other, and all will present smooth surfaces; and that, though the lobular structure seen in most vertebrata is absent in some fish, yet in several of the plagiostomatous fish it is shown by the arrangement of black pigment-cells, which everywhere follow the arrangement of the interlobular substance, so that the surface and sections of the liver exhibit islands of yellow substance, inclosed by dark lines.

*Secretion and properties of bile.* A series of experiments by Schwann* has led to the distinct conclusion of the bile being indispensable to life. They consisted in removing a portion of the common bile-duct, and establishing an external fistulous opening into the gall-bladder, so that the bile might be naturally secreted, but be discharged externally, and not permitted to enter the intestine. Their general result was, that, of eighteen dogs thus operated on, ten died of the immediate consequences of the operation (by peritonitis and other affections aggravated, probably, by the want of bile): and, of the remaining eight, two recovered and six died. In the six which died, death was the result of nothing but the removal of the bile; after the third day, they daily lost weight, and had all the signs of inanition, e. g. emaciation, muscular debility, uncertain gait, falling of the hair. They lived from seven to sixty-four days† after the operation; and the inanition was the greater the longer they survived. Young dogs appeared to die rather sooner than old ones. Licking the bile as it flowed from the fistula and swallowing it, had no influence on the consequences of the operation. In the two dogs that recovered, the importance of the bile was equally well shown; for in these it was found, when they were killed, that the passage for the bile into the intestine had been restored; and the period of its restoration was distinctly marked by their weight (which had previously been regularly decreasing) being augmented and continuing to increase till it amounted to what it was before the operation; and also by the fistulous opening into the gall-bladder healing and the discharge of bile ceasing.

Schwann says he is engaged in further and minute examinations to prove in what way the bile serves its important purpose; and these will probably prove how far several theories respecting it (of which not a few have appeared this year) are true or false.

The chemical composition of the bile has been the subject of careful examination in the Giessen laboratory by Drs. Theyer and Schlosser.* They obtained the bile in what they regard as the perfectly pure state, by evaporating that of the ox, immediately after death, to the thickness of an extract; dissolving it in common alcohol and adding alcohol till all the mucus was separated; treating the clear solution with animal charcoal till all the colouring matter was removed; then distilling off the alcohol and washing the residue repeatedly with ether, till no more fatty matter could be separated from it: and, lastly, evaporating to dryness. Elementary analyses were made of this pure bile, and of its combination with oxyde of lead. The latter was formed by mixing an aqueous solution of pure bile with a diluted solution of acetate of lead; it formed a white ropy plaster-like substance, in which it was proved that the organic substance of the bile remained complete and undecomposed, by reproducing it in its combination with soda. The compound thus formed by separating the organic principles from the combination with lead and uniting it with soda, was in no material respect different from the pure natural bile; so that it was quite evident that the substance which is united with the soda in the bile is (as Demarçay and Dr. Kemp already maintained) a peculiar organic acid. To separate this, in a pure state, various means were used, but the only satisfactory plan was by decomposing the salt which it forms (as already said) with oxyde of lead, by passing (with several necessary precautions) sulphuretted hydrogen through an alcoholic solution of it, and filtering and evaporating the remaining solution. The elementary analysis of the acid then obtained in the separate state agreed with those made of it in its combinations (both natural and artificial) with soda, and with oxyde of lead.

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* Müller's Archiv, Heft ii, 1844.

† One lived two months and a half; but it is not impossible that the bile-duct was for a time restored.

The bilic acid (Gallensäure) thus separated, agrees completely with the *bilifellic acid* of Berzelius; (his *bilin*, the authors regard as pure bile, or bile with an excess of bilic acid); it corresponds also to Demarçay's *choleic acid;* and Kemp's *bilic acid*† is the same, not completely separated from its combination with soda. Thenard's *picromel* and Gmelin's *sugar of bile*, and Berzelius' *bilifellinic* acid, are also this same *bilic acid*, more or less imperfectly separated, and the authors adduce the identity of composition in all the samples of bile that are examined as a proof that it is not, like the urine, a fluid by which a variety of morbid and accidental substances are separated from the blood—a compound of various and uncertain materials,—but a fluid separated by a true process of secretion under the determinate and regular influence of its secernent gland.‡

*Pancreas.* M. Blondlot§ says that having obtained three or four grammes of pancreatic fluid from the duct of a large dog, and examined it by means of an electric current, he could find no trace of albumen in it. He considers it to be of the same nature as the saliva, which he holds to be only a common mucous fluid, a kind of detritus or *caput mortuum* serving no active part in digestion, but merely protecting the organs on which it lies (!)

*Fæces.* The analysis of the ashes of firm human fæces by Enderlin‖ yielded, in 100 parts:

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|---|---|
| Chloride of sodium and alkaline sulphate | 1·367 |
| Tribasic phosphate of soda | 2·633 |
| Phosphate of lime and phosphate of magnesia | 80·372 |
| Phosphate of iron | 2·091 |
| Sulphate of lime | 4·53 |
| *Kieselerde* | 7·94 |

From the absence of carbonate of lime he deduces that the fæces could contain no choleic acid.

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* Annalen der Chemie und Pharmacie, Oct. 1843. Translated in the Medical Times, Feb. 3, 10, 1844. Additions in the Annalen of May, 1844.

† See last Report, p. 13.

‡ For an account of the mode in which Dr. Platner has prepared crystallized bilic acid and neutral bilate of soda from ox-bile, see Müller's Archiv, 1844, Heft ii, and Poggendorf's Annalen, Juli 1844. On the Analysis of the Bile of the Astacus fluviatilis, and some other Crustacea, see J. F. G. Schlemm 'De hepate ac bili crustaceorum,' &c.; Berolini, 4to. The bile of the Astacus is acid, and contains no bilin. In the same dissertation there are general confirmations of the received doctrine of the development of secernent cells, and a minute account of the nerves of the liver in the astacus and helix pomatia. See also some account of Mr. Ross's observations at p. 272.

§ Loc. cit. p. 124, &c.

‖ Annalen der Chemie und Pharmacie, Mars 1844.

## ABSORPTION.

*Lymphatic and lacteal absorption.* A systematic work on the lymphatics has been published by Dr. Herbst.* He considers (as M. Bouisson also does, and as Tiedemann and others may be said to have considered) that a process of secretion is combined with that of absorption in the extremities of the vessels. [But the opinion is maintained on very imperfect evidence; for neither of its authors is acquainted with the best accounts of the structure of the villi, or with the physiology of secretion, as an act performed by cells. Some other singular opinions are maintained in this work; but I give only those new results in matters of fact stated to have been obtained from experiments; and even of these, it is necessary to say, that the evidence, especially that derived from the microscope, is not altogether satisfactory.†]

1. The coagulability of the lymph is directly proportionate to that of the blood; and is probably due to coagulable matter passing from the latter into the former. 2. Blood-corpuscles are a common constituent of lymph; and their number is greatly and proportionately increased in all cases of unusually active circulation, congestion, or inflammation, whether local or general. In the former case, they pass in abundance into the lymphatics of the congested part. 3. When fluids are injected into the blood-vessels in quantity sufficient to distend them, the injected substance, (whether blood, milk, water, gelatine, starch, or whatever it may be) may be almost directly afterwards found in the lymphatics. And this same result is obtained, whether the injection be made during life or soon after death; nor is it only the fluid part of that which is injected which passes into the lymphatics; the solid parts also, such as the blood- and milk-corpuscles and the starch-granules, pass unchanged (though in less proportion) into both the lacteals and the lymphatics. Nineteen experiments are related in proof of these statements: the author ascribes the result to a transudation different only in degree from that which is normal. 4. More than twenty experiments are detailed at great length to prove (chiefly by microscopic evidence) that the lymph-corpuscles found of various sizes (from $\frac{1}{10}$ to $1\frac{1}{2}$ of the size of a blood-corpuscle) in the thoracic duct, are not essentially different from those in the true lymphatics and the mesenteric lacteals, nor from those of milk (!) and of chyme formed from fatty substances: (!) and that therefore the various corpuscles of chyme and milk may be considered to be absorbed entire and unaltered by the lacteals of the villi, and to be thence transmitted to the blood, in which they may also be found unaltered. 5. Another large series of experiments is related to prove that colouring matters (chiefly indigo), salts of potash, lead, &c. and starch in imperfect granules, are rapidly absorbed by the lacteals and by the lymphatics of the stomach. [But there was nothing in the mode of performing them by which it can be explained why their result was different from that obtained by others, who, in similar experiments, have found no absorption of the same substances: they therefore need only be referred to.] 6. Many of the experiments in which the preceding conclusions are founded, and some others purposely made, give evidence (as the very first observations by Asellius‡ do), that, for some time after apparent death, the lymph and chyle continue to be moved onwards by the peristaltic movement of the digestive canal, and by the contraction of the walls of their own vessels; and that also for some time after death, absorption itself is carried on, for considerable quantities of fluids injected into the stomachs of recently-killed animals which had fasted a long time, were carried into the thoracic duct.

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* Das Lymphgefässsystem und seine Verrichtung; Göttingen, 1844. 8vo.

† For example, it is often stated that after lymphatic vessels had lain in water till all the colour was taken out of their coats, *unaltered* blood-corpuscles were found in their contents: these are also so described in lymph diluted with water.

‡ De Lactibus seu Lacteis Venis.

A few facts not generally, if at all, hitherto known, are also recorded in the Studies on the Chyle, by M. Bouisson.* 1. When a few drops of sulphuric acid are added to the chyle of any animal, the same kind of odour is emitted as when the blood of the same animal is similarly treated: an odour, which as M. Barruel showed of the blood, and M. Couerbe of many secretions, is peculiar in each of many animals. [The fact, as M. Bouisson states, had already been observed by Vauquelin.] 2. Chyle, like blood, will often remain for a long time in its vessels without coagulating, but will coagulate rapidly on being removed from them. In one case it was fluid in a man twenty-four hours after death, but soon coagulated after its escape from the vessels. 3. The chyle-globules in the thoracic duct are, as Wagner has described them, lenticular. 4. Some experiments, apparently not very carefully performed, showed that milk injected into a dog's rectum (after purging and abstinence) was coagulated, acquired an acid reaction, and was nearly all absorbed by the lymphatics. 5. In rabbits fed for a short time with madder mixed in their food, no tinge of red is communicated to the chyle, even though the serum may be red; but if the same diet be continued till the colouring matter has thoroughly impregnated the blood, and is mixed with the urine and other secretions, it is imparted to the lymph and, thence, indirectly to the chyle.

Calculating from the analyses of Tiedemann and Gmelin, which showed a far larger proportion of fatty matter in the chyle of the recently fed, than in that of the fasting, horse, and a proportionally smaller quantity of albumen, Mr. Ross† has adduced further evidence for the view (assigned in the last Report to MM. Sandras and Bouchardat,) that the lacteals absorb none of the usual solid matters of the chyle, except the fatty matters; and that the proportion of solid matter in the chyle of the thoracic duct being less than that in the lacteal vessels is due to the chyle of the latter being diluted by mixture with the contents of the lymphatics. The other constituents of the chyle he considers to be absorbed by the roots of the portal vein, by which they are carried to the liver, and he believes that the observation of Tiedemann, respecting the apparent absence of fatty matter in the chyle when the bile-duct is tied, proves that the lacteals obtain oily matter, not from the chyle alone, but also and chiefly from the subtances secreted by the liver. He calculates from formulæ, that the bilic acid may be decomposed into an oily matter and an azotized substance which may assist to form proteine-compounds.

*Lymphatic hearts.* By Professor Stannius‡ the full discovery has been made of the existence of lymphatic hearts in birds, analogous to those in reptiles. He has found them already in the stork, ostrich, cassowary, goose, swan, diver, and hawk; and in all, with the exception of the last two, has found the walls of the heart formed by transversely striated muscular fibres. In the ostrich and cassowary these fibres form a layer from half a line to a line in thickness: in the *natatores* it cannot be discerned with the naked eye, but can (though, in some, still very sparingly) with the aid of the microscope.

It is the existence of these fibres which gives to these organs (already described as lymph-vesicles by Panizza) the right to be considered hearts. Their positions and connexions vary much in different birds. In all, several lymphatic vessels open into the cavity of the heart, and a vein proceeds from it which passes under the os ilii and joins the vena cava inferior. Lymph only has been seen in them, and they always have valves which prevent the passage of the lymph backwards into its vessels, and that of the blood from the vein into the lymphatic heart. In the swan and goose, in which alone these hearts have been observed during life, no active independent motion of their walls has yet been clearly seen, though there has been an appearance of a slow approximation of their walls, expelling their contents.

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* Gazette Médicale, 1844, 29 Juin, 6 Juillet, 3 et 17 Aôut, &c.

† Lancet, Feb. 10 and 17, 1844.

‡ Müller's Archiv, 1843, Heft v.

*Absorption by blood-vessels.*[*] The experiments of MM. Flandin and Danger[†] confirm the general rule of the absorption of poisons from the digestive canal, by the branches of the vena portæ. Hence they are all found in large quantities, and some exclusively, in the liver. Their latest examinations were made on the absorption of the salts of lead, which they detected in the digestive canal, the liver, spleen, kidneys, and lungs: but not in the blood, heart, brain, muscles, or bones. Lead differs from copper in that its salts after absorption may pass off with the urine.

Experiments, by Oesterlen,[‡] have also proved that mercury in its crude state is capable of being freely absorbed and circulated with the blood. It may be absorbed by the skin with the aid of friction, or from the intestinal canal. After absorption from the walls of the abdomen or the digestive canal, minute particles of it are found, for the most part, in the spleen, liver, and kidneys: and it is especially through the last two organs (at least in cats) that that which is absorbed is subsequently discharged. Globules of it have also been found in the saliva of a woman in whom it had been long applied in friction: and they existed in still greater number, (mixed, as in the saliva, with epithelium) in her urine. In one case mercury, absorbed in its metallic state, produced pneumonia with depôts of pus, apparently like that which ensues when mercury has been injected into the blood-vessels of dogs.

Mr G. Robinson,[§] continuing the experiments alluded to in the last Report, and varying them, has shown that when a stream of water is made to flow through a flaccid membranous tube perforated by numerous small apertures, it will exercise a force like that of absorption upon a fluid external to the tube. Under favorable circumstances some of the fluid outside the tube is drawn into it and carried on with the current that is flowing through it. [The results of such experiments, ingenious as they are, cannot be safely admitted to prove more than that the circulation is necessary to absorption by blood-vessels, and that flaccid vessels and a rapid stream are favorable to it, by permitting imbibition and by carrying off the imbibed fluid as fast as it can enter. In the small veins and the capillaries near them the current of blood is not rapid; but, as already said, its rate is only about an inch per minute in the latter, and 1-8th faster in the former. The *drawing* power of such a current must be incalculably small; and it is, visibly, so minute that a part of the blood in every small vessel adheres to the internal surface of the wall, the adhesion between them being greater than the force of the current can overcome. It is, therefore, not imaginable that the same force should be capable of overcoming the powerful capillary attraction of the fluids held in the pores of the walls of the vessels. It is only when these fluids, by mixing with the still layer, have passed into the central current, that they are carried on with the blood.]

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[*] I use this term rather than absorption by veins, because there is no doubt that this kind of absorption takes place through the coats of all blood-vessels that are not too thick, although, of course, the absorbed fluids are usually detected only in the veins.

[†] Report from the Académie des Sciences, Jan. 29, 1844, in the Gazette Méd. Fevr. 3, 1844. But in an extract from some journal in the Oesterreichische medic. Wochenschr., Mai 25, 1844, a Prof. Cozzi is said to have detected "a salt and oxyde of lead combined with the albumen of the blood of a patient suffering from lead-colic.

[‡] Oest. Medic. Wochenschrift, Fevr. 24, 1844; from Roser und Wunderlich's Archiv, Heft iv, 1843.

[§] Medical Gazette, June and July, 1844.

⁂ P. 250, last line of text, for × read +.

(*The Conclusion of this Report will appear in our next Number.*—Ed.)

# NOTICES OF THE LUNATIC ASYLUMS OF PARIS.

*In a Letter addressed to* John Forbes, M.D. F.R.S.

By John Conolly, M.D.

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My dear Sir,—You have at different times devoted so much space in your excellent Review to the subject of Insanity, and Asylums for the Insane, that I think you will be interested in an account of the impressions consequent on some visits lately made to the Lunatic Asylums of Paris, institutions again seen by me after the lapse of sixteen years, during which so much has been done in all the civilized countries of Europe to ameliorate the condition of the insane. If the last five years of my life, passed wholly among patients affected with various forms of unsound mind, can be supposed in some degree to have qualified me for observation, and for forming just opinions of what is suitable to them, my remarks may also, I trust, be of possible use at this time, when many new asylums are about to be erected in England, and benevolent persons, in almost every county, are directing their attention to the condition of the pauper lunatic, where no such asylums exist.

Having had the pleasure, in July last, of seeing M. Battelle at Hanwell, who is the director of the civil hospitals (*Hospices civils*) of Paris, and being consequently acquainted with the particular attention paid by him to the construction and government of asylums for the insane, I availed myself of his kind permission to call upon him soon after my arrival in Paris; and I met from him, as indeed from all the public officers of asylums whom I had occasion to wait upon in France, the most cordial and obliging reception. The memory of the agreeable interviews which I enjoyed, in the course of a visit of ten days, with the various doctors and other functionaries of these institutions in and near Paris, would always continue to be dwelt upon by me with gratitude and with pleasure, if even I had not met with still more to admire in the institutions over which the influence of their intelligence, zeal, and philanthropy extends. But I derived so much satisfaction from much that I saw, that I assure you when I turn to the hasty notes made in the wards as I passed through, I could wish to recall hours spent so delightfully, and with so much advantage, and to do fuller justice to the French asylums, by completing as descriptions what I am only able to offer you as sketches.

## THE SALPETRIERE.

The first asylum which I visited was the Salpêtrière, a part of which immense institution is appropriated to insane women; of whom there were 1600. M. Battelle accompanied me; and we found M. Falret, one of the physicians of the asylum, sitting in the schoolroom, a somewhat small but comfortable apartment, in which were collected about 100 of the patients, all perfectly orderly, all neatly dressed, and appearing to take as much pleasure in the occupations of the school as those who witnessed them.

To any one accustomed like myself to the daily observation of the insane, the mere appearance of these patients gave eloquent testimony concerning their general good and kind management. Some were engaged in needlework, which they chose to continue whilst attending to the singing, recitations, and other proceedings of the school. A few only were absorbed in ideas which no change of place can always relieve. None appeared to be in any way troubled or fatigued. All were neatly dressed; their handkerchiefs and caps presenting the variety and some of the singularities always seen when the dress of insane females is not regulated by severe general rules. Above all, almost every one was cheerful, and regarded the attendants, officers, and visitors, without the least indication of suspicion or dislike. A few of the attendants were sitting among them, and by their participation in all that was done, contributed to the general good effect.

As the institution of schools in the Hanwell Asylum has been a favorite object of my ambition, but one in which my hopes have been frustrated, in consequence of their suppression by an authority which I have no power of resisting, it was not without the most singular gratification that I beheld Dr. Falret sitting among his patients, like a father among his children, encouraging them, assisting them, directing them, and promoting all kinds of easy and agreeable intellectual exercises that might diversify the time for the afflicted objects of his care, and, by gentle efforts, lead perhaps, in not a few cases, to the gradual restoration of those powers with the loss of which all is lost that is worth preserving. The tranquillity, the content, the cheerfulness of that little room I shall never forget: and I trust that the hope such a spectacle inspired of being some day aided in a like attempt among the insane of my own country, will yet be realized before my mortal labours are concluded. At least I trust that the directors of other English asylums will not be discouraged from such an attempt. To have abolished all the horrible instruments of restraint from asylums, and to have substituted the more efficient and beneficial restaint of invariable kindness, is a great work, in which many of our English physicians, and directors of asylums, have taken part; but they must not imagine that having done this, they have done all. The perfection of their work remains to be undertaken. The end for which this auspicious liberation is but a means must yet be obtained. The troubled brain has been composed, and the heart of the insane tranquillized ; it now remains to be seen how far the exercise of the intellect can be restored, and the still more valuable empire of well-ordered affections can be regained. Such aspirations are not the mere results of impressions arising in a scene like that witnessed at the Salpêtrière ; they have been strengthened, if not formed, by seeing, day after day, among the poor objects of our care at Hanwell, the successful efforts of a kind schoolmaster and schoolmistress, with the occasional direction of the chaplain, to teach many very suffering patients to read, to write, to draw, to sing ; efforts rewarded by the obvious happiness produced by such occupations, and the perceptible improvement of the mental faculties of some of those engaged in them. When these efforts were no longer permitted, it was among my consolations that Hanwell was not the only asylum in which they had been commenced. The previous labours of MM. Ferrus, Leuret, Voisin, and Falret, were not unknown to me ; and to witness the happy continuance of those efforts would alone have repaid me for the journey to France.

The patients at the Salpêtrière have the advantage of a library, and several of them have read parts of the excellent books allowed for their perusal with so much attention as to be able, when requested, to recite them for the amusement of the other patients. Three or four of the women, in the schoolroom, were called upon in succession by Dr. Falret to do this. Each immediately stood up with much cheerfulness, and distinctly and pleasingly recited a short story or poem. This was done with great correctness; and it seemed as if the patients knew the whole of some long poems, which they went on reciting until stopped, when they sat down with an equal air of content. During the recitation many of the other patients appeared to be attentive hearers. Several of the patients were then invited to join in singing something; and they sung several verses, and in parts, very correctly and agreeably, and apparently without any sane leader. Afterward an Italian patient sung a beautiful air with considerable skill, to the evident satisfaction of her companions. I saw various specimens of their writing, which were excellent: it was, indeed, with regret that I left this part of the establishment, where, by means of innocent and improving recreations, the patients pass a portion of each day in tranquillity, and, it may even be said, in happiness; and it will be long before I lose the wish to see those cheerful grateful groups again. The school at the Salpêtrière is only a part of what has been done, and what I shall have to describe to you, for the instruction of the insane in Paris.

This place of careful instruction was but a preface to the whole of the establishment, which I found to be remarkable for its cleanliness, order, and tranquillity. I saw no patients walking about in strait-waistcoats, or muffs, or leg-locks, or handcuffs; and I heard no sounds of raving or fury. At a former visit, in 1828, the restraints and their constant accompaniments had not yet disappeared. In a very recent visit made to them by my son, traces of them were still visible, and attracted his attention by reminding him of our difficulties at Hanwell in 1839. But on the day of my recent visit there was, in fact, not one patient in restraint in the whole asylum. A few were in cells of seclusion, which are detached from the building occupied by the tranquil and industrious. It is true that the French physicians hesitate to admit the principle of the *total* abolition of mechanical restraints, but they employ them rarely, and with so much reluctance as to give every assurance that the period of the entire disappearance of the camisole is not far remote. To all the violent modes of restraint, however ingenious, they have, I think, always been opposed. M. Mitivié showed me an apparatus of iron and leather which he had some years since procured, I am sorry to say from England, in consequence of the very high praise bestowed upon its convenience, comfort, and even elegance; it is a most oppressive belt for the body, with chains and fetters for the hands; and it is gratifying to know that its repulsive appearance deterred M. Mitivié from ever using it. The case of Morris, immortalized in the plate attached to the work of Esquirol, is yet referred to with astonishment, and almost with incredulity. The whole spirit of the treatment of the insane in the French asylums appears to be mild, gentle, and humane; and the seeming exceptions to it, which I shall have to notice in speaking of other institutions, are to be ascribed to the same misapprehension concerning the indispensable employment of restraints in certain cases which yet impedes the progress of their abolition in some of our own asylums.

There has been a reciprocation of benefits between the two countries, which it is not unpleasant to reflect upon. Before the assigning of a part of the Salpêtrière to the reception of lunatics, and when these unhappy creatures were kept in narrow dormitories containing four rows of beds, each bed containing three or four restless patients, Tenon visited the English asylums, and he returned to Paris confirmed in his views of reforming this state of things. But even this good man conceived it necessary to project long corridors, with cells and chains on each side. Within ten years from that period, in 1792, Pinel liberated fifty lunatics from chains, which many of them had worn for years, and applied himself to the general amelioration of the condition of the insane with a zeal and success which will make his name remembered with honour for ever. About the same time the Quaker's Retreat was established at York, an institution in which humane principles wholly predominated, and to which all French authorities refer with respect. Early in the present century M. Esquirol began to second and to extend the beneficial labours of his friend and master Pinel. The frightful mismanagement of the York Asylum, in the very neighbourhood of the Retreat,—screened from exposure by all the authority of its committee, honourable men, slow to suspect and studiously deceived, somewhat ignorant also and jealous of authority—until the misdeeds and inhumanity of their officers could be concealed no longer; and the subsequent revelations consequent upon a Parliamentary investigation into the state of other institutions, led, it is well known, to a general improvement of the state of English asylums; in many of which no instrument of mechanical restraint is now to be found. If the French physicians yet hesitate to adopt this last and not least improvement, let us not forget that in their attempts to instruct the insane they have gone before us; and that, by the generous aid of the authorities under whom they act, they are setting in this respect an example most worthy to be followed by all other nations.

It is with feelings of the deepest mortification that I acknowledge how fatal to the speedy abolition of restraint in France must be the Report of the Metropolitan Commissioners of Lunacy, now translated by M. Battelle. The single example quoted from the male side of the Hanwell Asylum was a mere accident; but I am more grieved than surprised to find examples cited from the female side to show its inconveniences. The causes of this are involved in the general question of the necessity of having some fixed regulations for the government of asylums, which I hope will eventually occupy the attention of the governing bodies of those institutions, or of the legislature. In this respect I am inclined to think that both the continental and the Irish asylums are better managed than the asylums of England; and that there is consequently a prospect of more permanent and steady improvement in them.

The greater number of the buildings assigned to insane persons in the immense hospital of La Salpêtrière (where also the aged and infirm find an asylum or almshouse) consist of one story only, and this is divided into a large dormitory and a moderate sized day-room. There are several small tables in the day-rooms, covered with neat-looking oil-cloth. As the space between the beds in the dormitories is but an indifferent substitute for the ordinary galleries seen in asylums, it would be well if the day-rooms were larger. At present there is a want of space for exercise within doors. The dormitories are, however, wide and lofty, and generally contain thirty or forty beds: one of them contained 150 beds, and is too crowded. Their state of cleanliness is perfect; and although possessing only the ordinary modes of ventilation by the doors and windows, no bad smell was anywhere perceptible. Some of the floors are of polished oak, and some of brick. The beds are on a raised platform of oak, and those for the dirty patients have a large stone slab underneath them, and an oak flooring between each. At the side of each bed there is a chair; generally speaking the beds are superior to those in any English asylums. The beds for the sick are provided with white curtains. An air of perfect comfort prevails throughout; and a tranquillity perhaps even greater than desirable. Our patients at Hanwell are so lively and communicative, that I have been surprised by the general silence of the French asylums, and am unable to account for it. The difficulty is increased by a consideration of the habits of social life among the French, on which the directors of their asylums found their strongest argument for large dormitories and against single sleeping rooms.*

Constant experience of the inconveniences attending even a small number of dormitories, for twelve or eighteen patients, at Hanwell, has long caused me invariably to warn architects against them, and to recommend that although a certain number of smaller dormitories may be desirable, chiefly for the suicidal or the timid, each containing four or five beds, there should be single sleeping rooms in every asylum, in the proportion of at least two thirds to the whole number of patients to be accommodated. The violent must have single rooms; the mischievous must be placed in them for security, and the helpless for protection, unless the aggregate of restraint in an asylum is allowed to become excessive; the dirty generally require them; and of the tranquil a great many are constantly dissatisfied if obliged to sleep in rooms with others, and complain that they cannot sleep, and that they are annoyed by the language of the other patients. In a large dormitory one restless patient disturbs all the rest. The most tranquil patients, and those who are convalescent, are always petitioners for a single room: it becomes a kind of house to them; they attend to it themselves; they sit and write or read in it; they decorate it, and are made comparatively happy by its possession. If dispossessed of it, and forced into a room with others, they become fretful and discontented.

The character of French patients appears to be different. Nearly all the physicians, as well as M. Battelle, and M. Ferrus, the director-general of the asylums of France, assured me that the establishment of large dormitories had produced great content and tranquillity in the asylums; and they ascribed this to the general habits of social life among the French people. Consequently single rooms are only given to the violent, and as an indulgence to some of the convalescents; an indulgence which it is therefore presumable that they really do appreciate.

As large dormitories have been recently recommended by the Commissioners of Lunacy, chiefly on the plea of economy, a plea which is always popular, and generally delusive in matters of building, I fear they may be adopted in some of the new county asylums in England; but I believe the general testimony of superintendents in England would be strongly against them. On the testimony or example of private houses, licensed for the reception of pauper patients, I place very little reliance. Economy is the vital principle of such establishments; and if their patients sleep in large dormitories without doing much mischief, it is because the restless are fastened to their beds, and the disturbance they occasion to others is disregarded. In large dormitories there must be attendants at night, which I think objectionable, as disqualifying them in a great degree for active duty by day. They cannot enjoy needful rest; and how inconceivably harassing their daily duties are can only be known by those who are accustomed to spend a considerable part of the day in lunatic wards. Among other considerations of their general condition, too little attended to, it is most essential to their bodily and mental efficiency that their nights should be undisturbed, except when their turn of guard or night duty comes, which ought not to be oftener than once in ten or twelve nights.

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* In consequence of the crowded state of the Parisian asylums, several patients had been sent from them into the provinces, and among them some of the most refractory. M. Trélat's account of the removal of these patients, 400 in number, is singularly interesting and instructive. (Annales Médico-Psycologiques, Sept. and Nov. 1844.)

This is one of many points relative to lunatic asylums on which erroneous opinions are very likely to be indulged by all except the very few who are witnesses of what takes place in the hours of night as well as in the hours of day, in such institutions. A large dormitory looks neat and comfortable by day; the beds are in nice order, the floor is clean, the air is tolerably pure, and the room is quietness itself; but a dormitory full of patients who have been a few hours in bed is a very different place; the atmosphere is heated and oppressive, and every excitable patient is restless. Even in the daytime the air in the dormitories is generally less pure than in the single bedrooms. The entreaties of the more rational of the patients to be delivered from this purgatory, to which they generally give a warmer name, are such as very strongly express their sense of its discomforts. These are evils which ought not to be incurred merely to avoid expense; and there is no reason why many single bedrooms should have gloomier windows than those of dormitories. I greatly regret, therefore, that the commissioners, whose opinions will justly have great weight and authority, should have recommended large dormitories on grounds which appear to me to be so entirely unsatisfactory. (See Report of the Commissioners, 1844, pp. 12, 13, and 21.)

The French have naturally enough fallen into the error of supposing that the seclusion of patients at Hanwell, is a long imprisonment in dark and solitary rooms; as represented by the Commissioners. In the Hanwell Reports, the practice of seclusion is fully explained to be a simple exclusion of all irritations for a limited time, and of which the effects are most carefully watched, and known to be most salutary. The opinion of the commissioners was not the result of observation.

The buildings at the Salpêtrière, and in the other French asylums which I have visited, have less regularity of form than the more recent structures of a like kind in England; but they possess some advantages for the separation and classification of patients in the detached parts of which they consist; and they are free from the basements and upper stories that disfigure many of our asylums, and render them so difficult of ventilation, and even of proper inspection. Most of the buildings consist only of apartments on the ground floor; and they are separated from other buildings for other classes of patients, by large airing courts, in which there are trees and grass, and flowers; these courts, like those of Hanwell, having undergone much recent improvement.

But the inconvenience of several separate buildings, consisting only of one floor, or of two floors, is so great as regards the supply of provisions, as well as for the general purposes of supervision and attendance, as, I think, to form an insuperable objection to such a plan; although it has had the support of great authority; and, upon the whole, I am convinced that a straight continuous line of main building, extending from a central house and offices, is the best as well as simplest form for an asylum. This cannot well be prolonged further than for the accommodation of about 240 patients; in eight wards, containing about thirty patients each; which wards are best suited to the tranquil and clean, and moderately tranquil and orderly. The sleeping-rooms ought to be all on one side of the galleries of these wards, the galleries having large windows (in our climate,) toward the south. Wings at right angles with the main building, will provide for 120 more, including the more turbulent and untidy in four wards, each containing twenty-five patients, the galleries looking west and east. Ends of a T shape may be contrived to accommodate forty more; but it is not desirable to enlarge the wards for this description of patients, who are best managed when subdivided into smaller numbers.

Up to this point no great difficulty presents itself. Light, air, warmth, provisions, stores are easily distributed through the building, and each ward can have a separate airing court without destroying the classification secured by the division of wards; a point often forgotten; patients of various character as regards their malady being mixed in the airing-courts, and the windows of quiet wards overlooking refractory airing courts. This, therefore, should be considered the limit of the extent of an asylum. Its *maximum* should not exceed 400 beds. Its size, and the probable amount of remuneration will then be sufficient to secure able officers; whilst it may be conveniently and sufficiently superintended by one physician, with a dispensing assistant, and thus a uniform plan of management may be ensured. But beyond this extent, difficulties arise and accumulate. The impossibility of extending the building without impeding the access of air and light, or producing some unthought-of disadvantage, perplexes architects; and they are driven to add third stories, or seduced into excavating gloomy basements; so as to crowd a greater number of patients into a given space than ought to be collected in one building. It is then that two or three systems begin to prevail in the same house. Its form of government becomes insecure: and considerations of health as well as of convenience are often sacrificed to that of economy, or to pressing necessity. For these and other reasons, although I think large asylums in every way preferable to small ones, I am of opinion that the size should never exceed that of a building capable of containing 400 beds.

The quantity of land originally secured for a lunatic asylum is generally found to be insufficient for all the purposes of exercise and occupation. A comparison of the quantity found desirable in the best asylums with that attached to asylums in general seems to establish it as a rule, that where both male and female patients are admitted, it should be nearly in the proportion of ten acres to every hundred patients. In the Salpêtrière it is much below this; but all the patients are women, and employment out of doors is not required.

In the interior arrangements of the French asylums the dormitories are generally so situated as to open by a wide door into a commodious day room, in which some of the patients work, and all take their meals. The greater number of the patients are now, however, in separate work-rooms during the day and evening, except when out of doors, and in those rooms they have constant superintendence. In our asylums, where some of the patients are in the galleries, occupied, or merely walking about during the day, and others are in the day-rooms, which do not open directly out of the galleries, the superintendence is very inefficient. The difference is remarkably observable at Hanwell. In the refractory wards there are no day-rooms, and when the door of the ward is opened the visitor immediately sees the attendants together with the patients; whereas, in the quieter wards, the visitor has often to walk through a long gallery, and among numerous patients, before arriving at the day-room, where the attendants are out of sight and hearing of what passes in the gallery. For this reason I have for some time advised the omission of day-rooms in the plans of asylums, and the substitution of wider galleries, with deep bays or recesses, which plan is, I believe, adopted in the Derby Asylum. But I think it also highly desirable that there should be several detached rooms for employment, and some for recreation, all provided with proper attendants.

In the modes of warming and ventilating the French asylums there is nothing worthy of observation. Stoves are in general use, and the dormitories have large windows on both sides. The detached cells for the refractory are not warmed. There are no questions more difficult than those which relate to the best modes of obtaining warmth and fresh air. Warming by steam is not a convenient way of preserving an equal temperature for many hours Hot water is less open to that objection, but requires many repetitions of the apparatus. The more elaborate method of introducing warm fresh air, and removing foul air from the galleries and bedrooms, as in the Pentonville and Derby prisons, are perhaps the best; but every plan of ventilation should permit the frequent access of fresh air by windows; and whatever mode of warming is adopted in an asylum there ought to be an open fireplace in every ward.

The number and the comfort of the separate rooms for work, or reading, or recreation, at the Salpêtrière are among the great advantages possessed by this asylum. In more than one there is an excellent piano, and patients who are fond of music are permitted to play and sing there almost whenever they choose. These rooms are of various dimensions; some very large. In one large work-room there are 150 patients, some at needlework, and many employed in making, under the direction of a patient, very comfortable shoes of coloured worsted, on a last. In other rooms I saw many patients collected together for employment, or sitting down to dinner, who were formerly considered so refractory as to make such social assembling impossible. One hundred and forty-three chronic cases were in one such apartment at dinner; and in another eighty-four, of whom the greater number were advanced far into dementia, and many of whom were to be seen, only three or four years ago, lying on the floor, and presenting the most lamentable spectacle. The ameliorations in this part of the asylum are all of very recent date, and very striking. Rooms have been built for these poor people, and their condition raised at once from abject wretchedness to comfort. The number of those capable of being usefully employed has been found great beyond expectation, even among the least intelligent, the most inactive, and the least orderly of the patients; and idleness has become the exception. In the accomplishment of these great ameliorations I must not pass over the name of M. Trélat, whom I regret not to have seen, but whose exertions have been great and rewarded by surprising improvement in many of the patients. When beneficial changes are made, the pains it costs to make them are too much forgotten. When wards are reduced to order, and cleanliness is established, the meritorious attendants who have effected this are liable to dismissal to make room for new ones; and when one sees a long table, surrounded by a crowd of lunatics, dining in comfort, and using knives and forks, one may forget that here formerly each wretched patient devoured his food out of a dirty wooden bowl, crouching apart, like an animal of prey. Much that M. Trélat hopes to do yet remains to be accomplished; but even now the patients work together, dine together, have good beds, and are cheerful and tranquil; whereas they were formerly turbulent, slept on straw, and realized in their appearance the worst features of a madhouse.

Nothing does more honour to an asylum than the care and protection it extends to the imbecile and helpless. These unhappy beings may be neglected to a great degree with impunity; and that in the old asylums they were grievously so, is too well known. Among the objects which gratify me in every visit to Hanwell, none is more entirely satisfactory than the extreme attention paid to the most helpless of the patients, the imbecile, the idiotic, the paralysed, and all who have fallen into the utmost weakness of mind and body; a state in which they possess no interest for the ordinary spectator, whom they neither alarm by fury nor amaze by eccentricity. Unlike the less heavily afflicted, they can neither appeal to the philanthropy of the visitor nor to the authority of inspectors; and they would be lost if no compassion were excited by their very wretchedness and squalor, which, however, long pleaded silently and in vain. Among these are not a few whom the physician has traced through successive stages of mental and bodily decay, from the first storm of unreason to the last wreck of sense and intelligence, and who, he knows, can have no friend on this side of the grave if he ceases to be such. It is these abject creatures who have been rescued by the active benevolence prevailing in asylums from a state in which it was thought impossible to produce them to decent view. Many a wretch heretofore doomed to lie in hopeless neglect is now daily dressed in clean and warm clothing, and brought out of his bed to sit by the fire or to breathe the fresh and invigorating air. A feeble smile of recognition still passes over the features of these poor declining patients, and not a few of them utter words expressive of their content. They are reduced to the condition of children, and they are treated as children, fed as children, kept clean like children, put into bed like children; they are only not punished like children; but are guarded by night and by day from danger, violence, or neglect, until their poor remains of life can be husbanded no longer.

But for the quality of mercy, in these later times only fallen into their secluded cells, still, among these doomed creatures, in solitude and darkness, and foul smells, the old instruments of restraint would be triumphantly applied as substitutes for all trouble; and wretches still would linger and toss in straw and filth for months and years, through life to death, uncared for and unknown. Those days are past; but their heavy shadow still remains, and obscures humanity still in a kind of defiance of public inspection, and the public exposure of official Reports of the Commissioners of Lunacy. The persevering enmity, too, which has been steadily directed against the reformers of these things, has assumed, year after year, and still assumes so many ingenious shapes, that the friends of the insane must not permit themselves to be lulled into security, or believe that a gradual return to such things is quite beyond possibility. The old arguments against non-restraint, founded on a supposed necessity for other forms of cruelty in the place of restraints, or of a great destruction of clothes and windows, are still continually brought forward by those who first committed themselves by a demonstration of affection for fetters of iron and ligatures and muffs of leather; and the same insinuations are repeated of the insincerity of those who abjure the use of such mechanical methods in the treatment of infirmities and griefs of the mind. But with all this, humane principles proceed unchecked, and are silently working their blessed way into all the lunatic asylums of the world. A few of the old institutions of England, very few, may yet seem ambitious curiously to illustrate means of coercion becoming unknown elsewhere; but throughout Europe and America and Asia, such things will soon be rare. Already has an able and humane physician gone from Hanwell, by the express wish of the local government of Ceylon, to effect improvements in the condition of the lunatics of that distant colony; and, in a few years more, the traveller may have to record ameliorations even in the woful asylums of Cairo and Constantinople.*

When I contemplate this, the worst class of incurables, I always think with concern of the disposition apparent in some quarters to make a formal separation, in distinct asylums, of the *curable* and *incurable*. Such propositions are abstractedly pleasing; but the effect ought to be well considered. In the case of many incurables, the manners and habits during a great part of every year are superior to those of the curable, and, therefore, not detrimental to curable companions. The separation and transmission to an asylum for incurables would be felt by them as a sentence of eternal imprisonment. As it is, hope, the only blessing left, never dies within them; and some of them recover, after years of affliction, and beyond any ordinary expectation. At once to pronounce many cases incurable which seem so would be to commit many errors; and the asylum for those pronounced curable would always be half filled with cases really not to be cured. The only class, therefore, of the incurable who could safely be severed from the rest of the patients, as mentally dead, would be these poor imbecile, helpless creatures, fallen into fatuity and dementia: and there is much reason to fear that by separating them from a curative asylum they would lose all the benefits which alleviate their unhappy lot. It is quite unnecessary to mix them in wards with more intelligent patients; but it is surely humane to keep them under sufficiently active medical direction in an asylum where it is admitted as a principle, that if few cases admit of cure, every case admits of improvement. What I shall presently describe will show you that more can be done, even as regards the most idiotic patients, than their aspect gives any promise of.

The number of the epileptic and idiotic in the Salpêtrière is considerable, not less I believe than 400. The epileptic, of course, vary greatly in degrees of intelligence, and some of them appeared to be too sensible to be properly placed with the idiots and perfectly imbecile patients whose malady was more advanced. A subdivision of the epileptics is desirable in all asylums, as many of them are quite rational for long intervals between the attacks of a disorder which finally destroys the mental faculties. I did not observe any particular precautions against injury from falls, from which the epileptic suffer so frequently. The floors of the large apartments in which they are placed are of wood; but it does not seem that any kind of cap is considered useful; and this quite accords with my own experience: as there are few of these patients who fall in such a manner as to render it possible for the head to be protected by any kind of cap, and fewer still who will long wear a cap if put on for that purpose. It is a singular feature of this malady, when combined with insanity, that in many cases the patient seems to have no consciousness or memory of the successive attacks, and will report himself quite free from them, although, perhaps, only recovering from convulsion and stupor.

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* I admit the serious importance of one objection made to the non-restraint system, as practised in some asylums; namely, that whilst everything humane is professed, the attendants may practise an habitual severity and be guilty of secret cruelty. This is but too possible; although I believe nothing so rapidly deprives the attendants of all humanity, or so effectually and certainly brutalizes them as the habit of resorting to restraints. The obvious remedy for this suspected cruelty is never to overlook a known instance of cruelty or of wilful neglect. There is no other protection for the patients, and an asylum is ill governed where the physician cannot afford this protection to his patients.

In a printed letter addressed to Lord Ashley, dated 1844, bearing no name of author or printer, such very grave charges are made against those who have adopted the humane system as demand strict investigation. The expressions and sentiments in the letter, as clearly demonstrate its origin as if the matron whose office is subscribed to it had affixed her name to it. But with all the deductions thus rendered necessary, there are some things set forth in the letter which at least show the desirableness of a searching inquiry into the actual state and government of County asylums, and of some uniform laws being devised for the protection of the patients and also of the officers.

The notion so obstinately cherished by the lovers of restraint, that it is necessary to fasten every epileptic to his bed at night, in order to prevent turning on the face and suffocation, does not appear to have found its way into the minds of the French physicians, and the pernicious practice founded upon it is unknown.

As many as eighty idiots and epileptics were in one day-room at the Salpêtriére, and the confusion was less than one would have expected. I should be inclined to waive my objection to large dormitories in the case of the epileptic, who are frequently subject to fits in the night, which are sometimes fatal. Several of them are, however, so liable to accessions of sudden and violent mania as to require separate sleeping-rooms; and sudden deaths will occur among the epileptic by night and by day, without the possibility of relief or assistance from those nearest to the patient at the time. There is, perhaps, no class of the insane whose character is more injured by restraint than the epileptic; their attacks of excitement being so frequent, that if always met by restraint, the patient passes, but a small portion of his time in perfect liberty. The cheerful appearance of these patients in the crowded apartments at the Salpêtrière, and the perfect order and tranquillity observable in the male ward of Hanwell entirely filled with epileptics, and which I remember one of the most turbulent and dangerous wards in the asylum, sufficiently declare the advantage of non-restraint in this class of cases; in which, at the same time, all the ordinary and extraordinary difficulties of maniacal violence require to be provided against.

Among the difficulties attendant on the management of an asylum, the care of those unhappy patients whose malady has incapacitated them for attending to personal cleanliness presents not a few. Under the old system, looked back to with such fond regret, restraints were the only resource. The patients were left to wallow in dirty straw, horrible to view and smell, but secure. In the Salpêtrière there is nothing in the atmosphere to notify to the visitor that he is in wards devoted to this class of patients. The wards for these patients contain about twenty-four; they sleep on thick beds of straw, and all ordinary inconveniences are avoided by scrupulous attention to its cleanliness. But I neither think this kind of bed, nor the perforated bedding of the Bicêtre, protected by a waterproof covering, nor the beds of sea-weed also used there, so unobjectionable as our simple *frame-beds* at Hanwell; which consist of a piece of strong canvass fixed on a light frame, fitting on to each bedstead, and easily removeable; the bedstead or crib being lined at the bottom with lead, sloping to a central perforation. These were adopted after long trial at Gloucester and at Nottingham, and under their use we have had none of the terrible cases of ulceration of the back, which were both common and fatal, when troublesome or helpless patients were fastened down, or were kept long lying on straw. Most of the contrivances for the beds of dirty patients presuppose this night-restraint to an extent which does not allow the patient to turn, or even to lie comfortably on either side.

Several paralytic patients are placed in these wards, chiefly presenting the form now so generally recognized in lunatic asylums, and so little known anywhere else, to which the name of General Paralysis, or Paralysis of the Insane, has been given. In this unhappy combination of paralysis and insanity, so difficult to account for, so much more common in men than in women, and in the temperate than in warmer climates, the speech becomes early and peculiarly affected, and by degrees the patient reaches the utmost stage of helplessness. My own observation leads me to pronounce all such cases absolutely hopeless, and to say that the slightest tremor of the lips, or affection of the tongue peculiar to it, is of fatal omen. But it is only right to say that some physicians are more sanguine, and among them M. Falret, who is of opinion that heroic counter-irritation of the spine checks the progress of the malady. Its progress is certainly much retarded by care and proper nourishment, and the patients grow fat, and are distinguished by a remarkable and most characteristic exhilaration of mind. I first saw cases of this kind at Charenton in 1828, when they were pointed out to me by M. Calmeil, who first gave a full and distinct account of this singular malady. We have always numerous examples of it in the Male Infirmary at Hanwell. The old restraint-chairs were often occupied by these unfortunate patients; but I did not see one of these in use in Paris.

A part of the building at the Salpêtrière consists of rows of single cells for violent patients, quite detached from other wards, and opening on a wide airing-court. In these everything is done with a view to security, but I saw no apparatus of chains or restraints of any kind. Very few of the cells were occupied; and, as I have before said, there was not a patient in a strait-waistcoat in the whole asylum. The tranquillity of what might be called the refractory wards was perfect; and the general sense of safety felt by the attendants and officers may be deduced from the circumstance of all the patients in the asylum (with occasional exceptions) being allowed to use an ordinary shaped knife and fork at dinner.

The means of administering baths of various kinds, for the repression of excitement, for the relief of oppression, or for mere comfort and cleanliness, is a very important part of the arrangement of an asylum, and one to which the French have paid great attention. The baths are many in number, shallow, and somewhat coffin-shaped, and generally in one large apartment. Several patients are to be seen almost at all hours of the day in the baths, and a lid is affixed to each bath, which secures the patient in it; of course leaving his head out. The warm or tepid bath is thus applied for hours, chiefly as a sedative. Sometimes a large cap-shaped sponge, dipped in cold water, is applied to the head at the same time; and sometimes pails of cold water are thrown over the head. The douche is occasionally used; but I saw no shower-bath. The patients seemed much at their ease in the baths, and some of them occasionally slept. I have myself long discontinued the use of the douche, finding that all its advantages are obtained from the use of the shower-bath, without its inconveniences; the patient being benefited more, and suffering less. On the advantages of the tepid and warm baths it is unnecessary to make any remarks, and I believe the prolonged use of them is sometimes peculiarly serviceable. The French physicians occasionally use the cold affusion alone; but the *bath of surprise* is abolished. Perhaps I ought to explain that this ingenious application of the bath consisted in suddenly throwing a patient, bound hand and foot, into a large cold bath, and repeatedly forcing his head beneath the surface. Many patients have described this to me, and young women have told me that they were conducted to this bath of fear and torture by male attendants. This was one of the ordinary accompaniments of the restraint-system. Can you wonder that I dread the danger of its being restored to favour?

Although my visit to the Salpêtrière was so long that it would have tired out any less kind guide than M. Battelle, I left it with great reluctance; and having the pleasure of afterward meeting the Abbé Christophe at M. Falret's, I was glad to have his sanction for attending with him the next day, Sunday, in his visit to the patients. On going into the large church of the Salpêtrière, at eleven o'clock, I found it filled with the numerous pensioners or alms-women of the institution, excepting about two of the portions of the church radiating from the central altar. Notwithstanding all my familiarity with insane people I at first experienced some difficulty in ascertaining in which of the radiations the patients were seated, so perfectly decorous were they all. At length I recognized the Italian patient, and then others, and placed myself near them, still often doubting whether all those around me were really insane or not; so quiet were they, and so apparently attentive and devout. I stood by them as they moved away at the end of the service, and received many kind nods and smiles of recognition ; but there were very few who exhibited much eccentricity of manner. On passing out of the church they walked, four and four, to their own part of the establishment, with the most perfect order and decorum, and their comfortable dress and general appearance were highly gratifying.

As I differ in opinion from the admirers of restraints on almost every point of treatment, so I especially differ from them in my estimate of the consolation and advantage of religious instruction or conversation by means of a chaplain, which they naturally enough depreciate. The truth is, that restraint vitiates everything, neutralizes all moral treatment, and reflects disgrace and even ridicule on attempts of any higher kind. It is not so where the patients are treated with uniform kindness—I would say like children ; but I ought rather to say like human beings. At the Salpêtrière, as at Hanwell, I witnessed the affecting spectacle of a lunatic congregation listening to a sermon. They adjourned from the church to the school-room, where the Abbé addressed them in a discourse which lasted about twenty minutes. Everything was done with great simplicity. The patients sat on the benches, the female attendants being scattered among them. The preacher sat at the desk usually occupied by the physician, and I was allowed a chair by his side. A few verses of a hymn were sung by the congregation, accompanied on the piano by a patient. The sermon was very plain and clear, and full of kind and hopeful observations. Most of the patients seemed attentive to it : one or two wept, and others endeavoured to console them. One patient alone became restless, said she heard a voice calling to her, and walked quietly out of the chapel. At the conclusion of the service I took a kind of brief general leave of the patients, strengthened, I hope, in every good determination to exert myself for the insane ; more regardless, if possible, than I have been, of personal consequences. We had scarcely left the chapel when a general clapping of hands and shouting took place, and the head nurse followed us to say that it was occasioned by some observation of hers concerning the notice I had taken of the patients. I have often said that lunatics require the most scrupulous demeanour towards them ; they do not like to be treated as if they were childish, and they scrutinize expressions of pity with a strong suspicion of being insulted ; but to friendly greetings and recognition they are very sensible ; and I am not ashamed to confess that long habit has attached me to their unsophisticated manners, of which, at least, flattery forms no part, and that the occasional indications of their feelings and their gratitude are among the things that have bound me so closely to the cause of their welfare.

MM. Falret, Mitivié, Baillarger, and Trélat, all men of eminence, and whose only rivalry appears to be that of introducing improvements, are the physicians who attend to the insane at the Salpêtrière. Each has his distinct division of the asylum. There is a director, who is not medical ; and he is assisted by a steward. In the French asylums there is no matron. There is a chief nurse in each division, acting entirely under the direction of the physician ; and there are female superintendents of the laundry, work-rooms, &c. In each ward there is a nurse and an under nurse ; they wear very neat dark dresses, and caps distinctive of their rank. The head nurse appeared to be an active, cheerful, kind person ; and she receives 360 francs a year, about fifteen pounds English. The under-nurses are paid 120 francs. The greater number of them are young and of respectable appearance. The nominal proportion of attendants to patients is one to ten : but as several of them have miscellaneous duties, the actual superintendence of the patients devolves on a smaller number, probably on one for every fifteen patients, which is not very different from the proportion existing at Hanwell.

No one has derived more advantage in treating the insane than I have done from the co-operation of a matron ; and it is to be feared that where there is no such officer many consolatory offices towards the patients must go unperformed. But the office demands a union of qualities rarely found in woman : great courage, great patience, great temper, great zeal, great humanity, and a willingness to act as an auxiliary to the medical officers. None of these qualities are common ; but the last is the most difficult to be met with, and its absence is the cause of great evil in many asylums and hospitals in England, embarrassing the physician, and neutralizing all his efforts.

In accordance with the general spirit of philanthropy pervading this noble institution, a kind protection is afforded to those who leave it when recovered. It may seem strange to those who witness the very frequent petitions for liberation addressed to visitors in the wards of an asylum to be told that there are not a few patients who quit it with regret and with tears. The dreadful aspect of poverty appals them, and they tremble to leave the threshold where they have been treated with humanity, and have known no want. Yet to keep these destitute persons in the asylum is impracticable; and it becomes, at length, imperative to turn them out again into a world in which it is but too probable they will starve, or, less miserable, become insane again, and qualified for a shelter and refuge elsewhere denied to them. For the relief of these patients the fund called the Adelaide Fund (from its royal and benevolent founder) was several years since established at Hanwell. Still more important relief, however, is given to those discharged from the Salpêtrière. An establishment exists which is intermediate between the asylum and society, affording a temporary home, suitable occupation, medical and moral superintendence, and, after a time, opportunities of resuming the labours and duties of ordinary life. Even the children of these patients receive the care and training which they often so peculiarly demand.

Amidst all the overflowing charity of England, no such refuge exists. I trust, my dear sir, that after being already associated in not a few useful designs, we are neither of us too old to hope that yet before we die we may assist in promoting an establishment so full of merciful influences; and also see a model asylum instituted for those most afflicted persons who, belonging to the educated portion of the middle classes, and depending on the continued exercise of their talents and industry, fall at once, when affected with even temporary mental disorder, from comfort to ruin, and whose families are hopelessly dragged down with them to poverty and want. The rich, if insanity falls upon them, are surrounded with all the care that wealth can command or sympathy suggest; the poor can apply to the parish and be received into a county asylum; but the class between the rich and the poor suffer without resources, and often long unknown. All the prolonged pains and griefs of concealed poverty beset and torture them; and no relief presents itself until they have wholly fallen into the rank of paupers.

### THE BICETRE.

This large asylum is appropriated to male patients, or rather, as in the case of the Salpêtrière, a portion of the immense hospital is set apart for them, the rest being occupied by elderly or decayed tradespeople and others. About 2000 of these occupy the parts of the building first approached, and the buildings behind these contain 800 or 900 male lunatics. M. Voisin and M. Leuret are physicians to this part of the establishment; with both of whom, as well as with M. Mitivié, one of the physicians to the Salpêtrière, I had subsequent opportunities of becoming acquainted.

I was accompanied round this asylum by M. Battelle, and by M. Mallon, the director, and had afterward an opportunity of hearing from himself the exposition of the views of one of its able physicians, M. Voisin, whose singular zeal in the cause of the idiotic class of patients has caused difficulties to be overcome, which appeared at first to be insurmountable. The first part of the Bicêtre to which I was conducted was a school exclusively established for the improvement of these cases and of the epileptic, and nothing more extraordinary can well be imagined. No fewer than forty of these patients were assembled in a moderate sized school-room, receiving various lessons and performing various evolutions under the direction of a very able school-master, M. Seguin, himself a pupil of the celebrated Itard, and endowed with that enthusiasm respecting his occupation before which difficulties vanish. His pupils had been all taught to sing to music; and the little band of violins and other instruments, by which they were accompanied, was formed of the old almsmen of the hospital. But all the *idiotic* part of this remarkable class also sung without any musical accompaniment, and kept excellent time and tune. They sung several compositions, and among others a very pretty song, written for them by M. Battelle, and sung by them on entering the class-room. Both the epileptic and idiotic were taught to write, and their copy-books would have done credit to any writing-school for young persons. Numerous exercises were gone through, of a kind of military character, with perfect correctness and precision. The youngest of the class was a little idiot boy of five years old, and it was interesting to see him following the rest, and imitating their actions, holding out his right arm, left arm, both arms, marching to the right and left, at the word of command, and to the sound of a drum beaten with all the lively skill of a French drummer by another idiot, who was gratified by wearing a demi-military uniform. All these exercises were gone through by a collection of beings offering the smallest degree of intellectual promise, and usually left, in all asylums, in total indolence and apathy. Among them was one youth whose intellectual deficiency was marked in every look, gesture, and feature.

I think a more particular account of this poor boy's progress deserving of record, as an inducement to the philanthropist to enter on a new field of instruction presenting many difficulties, but yet not unproductive of results. But I must premise that to M. Voisin, one of the physicians of the Bicêtre, the honour seems chiefly if not wholly due of having attracted attention to the various characters of idiots, and their various capacities, with a view to cultivating, with precise views, even the fragmentary faculties existing in them. His work, entitled 'De l'Idiotie chez les Enfants,' abounds with remarks calculated to rescue the most infirm minds from neglect, and to encourage culture in cases before given up to despair. Fourteen years' experience has confirmed the soundness of his opinions; and they have had the sanction of MM. Ferrus, Falret, and Leuret, physicians of the highest distinction in the department of mental disorders. M. Ferrus, who is the President of the Academy of Medicine, and Inspector-General of the Lunatic Asylums of France, was, indeed, the first to occupy himself, so long ago as in 1828, with the condition of idiots at the Bicêtre, of which hospital he was the chief physician. He organized a school for them, caused them to be taught habits of order and industry, and to be instructed in reading, writing, arithmetic, and gymnastic exercises. M. Voisin's first publication on the subject appeared in 1830. The efforts of M. Falret at the Salpêtrière for the instruction of the insane, already spoken of, began in 1831 by the establishment of a school in that institution for idiotic females. Nine years later, MM. Voisin and Leuret, as physicians to the Bicêtre, organized a system of instruction and education on a greater scale. These benevolent and successful efforts deserve to be remembered, as they no doubt prepared the way for the systematic attempt since made at the Bicêtre, where M. Seguin is enabled to apply to practice principles of tuition long recognized as regards the deaf and dumb, but only beginning to be acknowledged as respects those unfortunate beings whose mental faculties are congenitally imperfect in all the various degrees classed under the term idiocy. In this application the master has to educate the muscular system and the sensorial apparatus, as well as the intellectual faculties, or rather the intellectual faculties through them, as a preliminary; doing, in fact, for them by art, by instruction, by rousing imitation, what nature does for healthier infant organizations. The healthy infant is placed in a world calculated to exercise its senses and to evoke and perfect all its muscular powers, and, to a certain extent, its intellectual faculties. The imperfect or idiotic infant is in the same world, but its senses are, to a great extent, closed to these natural influences, and its powers of muscular motion are incomplete; its intellectual faculties are not evoked by these means, and are even incapable of being fully evoked by any means whatever. The attention is vague, the memory feeble, the imagination futile, comparison is most limited, judgment most imperfect, and all the affections, sentiments, and moral qualities are disordered or perverted. The interesting question is, to what extent can careful and skilful instruction make up for these natural deficiences; and, as already done for the deaf, the dumb, and the blind, reclaim for these unfinished creatures the powers and privileges of life. The exertions of future philanthropists will answer this question. Improvement must not be looked for beyond what is strictly relative to the imperfect individual in each case; but it would seem to be true of idiots, as of the insane in general, that there is no case incapable of some amendment; that every case may be improved, or cured, up to a certain point,—a principle of great general importance in reference to treatment.

In the school for idiots and epileptics, at the Bicêtre, a careful register is kept of the psychological condition of each pupil, according to a printed form, for the examination of their instinctive, moral, intellectual, and perceptive state. I was obligingly furnished with a copy of the register relative to the subject of my immediate observations, *Charles Emile*, and also with a copy of the *résumé* or summary of his case, made by M. Voisin himself.

The age of Charles Emile is fifteen: he was admitted to the school in June, 1843. He is described as being of a nervous and sanguine temperament, and in an almost complete state of idiocy; the faculties which remain being in a state of extraordinary activity, and rendering him dangerous to himself and to others; but still idiotic in his inclinations, sentiments, perceptions, faculties of perception and understanding, and also of his senses, of which some were obtuse, and others too excitable. He was consequently unfit, to use the words of M. Voisin, "to harmonise with the world without." As regards his *inclinations*, he was signalized by a voracious, indiscriminate, gluttonous appetite, *un érotisme hideux*, and a blind and terrible instinct of destruction. He was wholly an animal. He was without attachment; overturned everything in his way, but without courage or intent; possessed no tact, intelligence, power of dissimulation, or sense of property; and was awkward to excess. His *moral sentiments* are described as *null*, except the love of approbation, and a noisy instinctive gaiety, independent of the external world. As to his *senses*, his eyes were never fixed, and seemed to act without his will; his taste was depraved; his touch obtuse; his ear recognized sounds, but was not attracted by any sound in particular; and he scarcely seemed to be possessed of the sense of smell. Devouring everything, however disgusting; brutally sensual; passionate,—breaking, tearing, and burning whatever he could lay his hands upon; and if prevented from doing so, pinching, biting, scratching, and tearing himself, until he was covered with blood. He had the particularity of being so attracted by the eyes of his brothers, sisters, and playfellows, as to make the most persevering efforts to push them out with his fingers. He walked very imperfectly, and could neither run, leap, nor exert the act of throwing; sometimes he sprang like a leopard, and his delight was to strike one sonorous body against another. When any attempt was made to associate him with the other patients he would start away with a sharp cry, and then come back to them hastily. M. Voisin's description concludes with these expressions: "All the faculties of perception in this youth are in a rudimentary state; and if I may venture so to express myself, it is incredibly difficult to draw him out of his individuality, to place him before exterior objects, and to make him take any notice of them. It would not be far from the truth to say, that for him all nature is almost completely veiled."

This description not only exemplifies M. Voisin's careful mode of observation, but shows that an example of idiocy less favorable to culture could scarcely have been presented to the instructor. This same poor idiot boy is now docile in his manners, decent in his habits, and capable, though not without some visible effort, of directing his vague senses and wandering attention, so as to have developed his memory, to have acquired a limited instruction concerning various objects, and to have become affectionately conscious of the presence of his instructors and friends. His general appearance is still that of an idiot. His countenance, his mode of walking, all that he does, declare his very limited faculties. Nature has placed limits to the exercise of his powers which no art can remove. But he is redeemed from the constant dominion of the lowest animal propensities; several of his intellectual faculties are cultivated, some have even been called into life, and his better feelings have acquired some objects and some exercise. In such a case as this we are not so much to regard what is merely accomplished for the individual. A great principle is established by it in favour of thousands of defective organizations. After witnessing the general efforts of this school of the most imbecile human beings, and hearing the particulars of Charles Emile's history, it was really affecting to see him come forward when called, and essay to sing a little solo when requested; his attempt at first not being quite successful, but amended by his attention being more roused to it. His copy-book was then shown to me, and his writing was steady, and as good as that of most youths of his station in life. The schoolmaster, who seemed to take great pleasure in the improvement of this poor fellow, then showed us how he had taught Charles to count, by means of marbles and small pieces of wood, or marks made on a board, arranged in lines, the first containing an 0, the second 00, the third 000, and so on. Charles was sometimes out in his first calculations, but then made an effort and rectified himself. He distinguished one figure from another, naming their value. Large pieces of strong card, of various shapes, were placed in succession in his hands; and he named the figure of each, as square, triangle, &c. and afterward drew their outlines with chalk on a black board, and, according to the desire of M. Seguin, drew a perpendicular, or horizontal, or oblique line; so effectually attending to what he was doing, that if any line was drawn incorrectly he rubbed it out and began anew. He also wrote several words on the board, and the name of the director of the Bicêtre, without the name being spoken to him.

This case was altogether the most interesting of those which I saw; but there was one poor idiot standing a great part of the time in a corner, to all appearance the very despair of art: even this poor creature, however, upon being noticed and brought to the table, proved capable of distinguishing the letters of the alphabet. Most of the others had received as much instruction as has been described, and could count, draw lines and figures, write, perform various exercises, and point to different parts of the body, as the head, the eyes, the arms, the feet, &c., when named to them. In all these cases, and pre-eminently in that of Charles Emile, the crowning glory of the attempt is, that whilst the senses, the muscular powers, and the intellect have received some cultivation, the habits have been improved, the propensities regulated, and some play has been given to the affections; so that a wild, ungovernable animal, calculated to excite fear, aversion, or disgust, has been transformed into the likeness and manners of a man. It is difficult to avoid falling into the language of enthusiasm on beholding such an apparent miracle; but the means of its performance are simple, demanding only that rare perseverance without which nothing good or great is ever effected; and suitable space, and local arrangements adapted to the conservation of the health and safety of the pupils; to the establishment of cleanly habits; to presenting them with objects for the exercise of their faculties of sense, motion, and intellect; and to the promotion of good feelings and a cheerful active disposition. The idiot who is capable of playing and amusing himself is already, as M. Seguin observes, somewhat improved.* I can but regret that I had not time to watch the progress of this interesting school from day to day, and to trace the growth of knowledge in the different pupils; as of the first ideas of form and colour, into writing and drawing; the development of articulation and the power of verbal expression; the extension of memory to calculation; the subsidence of gross propensities, and the springing forth and flourishing of virtuous emotions in a soil where, if even under the most favorable circumstances the blossoms and fruits are few, but for philanthropic culture all would be noxious or utterly barren.

The schools for the insane patients of the Bicêtre, who are neither idiotic nor epileptic, exceed in interest, if possible, those of the Salpêtrière. Male patients are better prepared in general than female patients to derive benefit from such instruction; they are also more attentive and, perhaps, more able to receive various instruction. I have never seen more exquisite penmanship than that of some of the male patients; the drawings of some of them were most beautiful; and I will not attempt to describe the effect of their singing, although I can never lose the impression of it. Here, too, as in the school at the Salpêtrière, the most cheering thing of all was to see the evident comfort and happiness created by the various and not fatiguing occupations of the schools; to witness the satisfaction with which the afflicted, the paralysed, the utterly incurable, exhibited the performances which they yet retained the power to accomplish. If no other end were answered by the formation of schools, they ought to be established as recreative, palliative, remedial even, in every lunatic asylum.

There is no asylum in which the good effect of occupation has been tried to a greater extent than at the Bicêtre. The exertions of M. Ferrus long since procured for this purpose the farm of St. Anne, at some distance from the asylum. Unfavorable weather and want of time contributed to prevent my visiting this farm, the extent of which is, I believe, about 150 acres. Its cultivation has realized the most sanguine expectations of the physicians as regards the bodily and mental improvement of the patients employed upon it; and, what is of far less consequence, has actually been profitable. A simple regard to the profit of occupations for the insane will always limit the application of this most important remedy; and it is, therefore, satisfactory that the farming at St. Anne has not been a source of loss. The patients in the schools, even some of the epileptic and idiotic, work when the weather permits it; and for some, who are employed nearly every day, there are evening classes. Thus every objection is removed which can be raised against the instruction of the insane, even by those who regard economy as the first consideration. Out of 800 male patients, 200 receive instruction.

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* Hygiène et Education des Idiots. Par Edouard Seguin. Paris, 1843.

Although farm-labour is not the only occupation of the patients at the Bicêtre, it is yet probable that a greater variety of occupations might be furnished. This is certainly the case in most of the English asylums. The asylum at Glasgow is, perhaps, the only British asylum in which there is a printing-press; but patients cannot be employed without having superintendents and teachers of work, and proper work-rooms; and the dread of expense is the explanation of the crowd of unemployed men in all the wards of our lunatic institutions.

The general arrangements in the wards of the Bicêtre are of the most comfortable description. The same order and cleanliness, the same industry and tranquillity, are observable as at the Salpêtrière. The visitor is not furnished with reports of the asylums in Paris, where either such reports are not published, or are as rarely presented to a stranger as at Bethlem or St. Luke's. In all our county asylums the reports and statistical registers, &c , are readily procured, and offer a kind of security for general good arrangements, as well as much useful information. I am unable, consequently, to give any diet table of the Bicêtre or of the Salpêtrière, or any details with regard to the clothing of the patients, per centage of deaths or recoveries, &c. The appearance of the patients indicates that their diet is in no respect defective; and the meat in the slaughter-house, the bread, the soup, the vegetables, and the complicated and important performances carrying on in the kitchen, were extremely satisfactory to the spectator. The soup is certainly better than that usually produced by our English cooks in such institutions. The clothing of the French patients is capable of much improvement, and there is every reason to expect that it will soon be much improved. The excuse alleged for its present state is want of ample funds. The laundry arrangements are very good, although very different from those of our asylums.

Few of the patients at the Bicêtre were violent, few in seclusion, none in restraint. Everything is done to habituate them to social life. They sleep in large dormitories, work together, dine together, read, write, and amuse themselves together, attend the services of religion together. The very refractory and the furious are not often seen in asylums conducted on the principles which prevail there; but when such cases prevent themselves they are separated from the rest; all irritations are carefully excluded, baths and other remedial means are resorted to, and no violent methods of repression sanctioned. Such at least appears to be the rule, and I saw no probable evidence of exceptions, no chains or cords, no manacles or leg-locks, no bath of surprise, no whirling chair, no boxes or osier baskets for inclosing the body and limbs of the turbulent, no patients sitting in restraint chairs as a substitute for superintendence and care. I have been told that very recently there were many, and if so, their disappearance is of good augury. It would, indeed, have been strange to find such things in an asylum made memorable by the signal services rendered to the insane by Pinel; for it was here, in basement-dungeons and dark and dreary cells shut out from the light of day, that this great physician liberated fifty-three captive lunatics with his own hand. The epoch (1792) was unfavorable to any humane enterprise, and vitiated in some degree the good effect of this; but its blessed influence has never since been wholly lost.

It is to be remembered that at that time all the rigours of treatment were sanctioned by the highest medical authorities. Very humane physicians recommended the flogging of lunatics as a part of their regular treatment. The insane, it was said, were to be subdued ; the depressing passions were the most likely to subdue them ; fear was the most powerful of the depressing passions ; and this was most surely, readily, and conveniently excited by stripes. On this conclusive reasoning was founded a decisive practice; and patients were scourged without mercy and without remorse. This horrible doctrine, and the usages founded upon it, were struck down by the courage of Pinel ; not at once resigned ; clung to, as all cruel modes of restraint yet are, but at least discountenanced for evermore.

We can never do too much honour to the memory of Pinel. Without examples to animate him, or protection or sympathy to encourage him, he proceeded alone in this great undertaking; disregarding personal risk and probable loss of reputation; and although the objects of it had well nigh forgotten the use of their senses and their limbs, benumbed by years of captivity in some cases amounting to forty, he had the great reward of seeing tranquillity succeed in the asylum to constant tumult, and even some of these patients eventually recover their reason. Apart from the great transactions on which the destinies of nations have turned, there is not, perhaps, in the annals of mankind any action more great and noble than this. Only fifty were set free by it, but it has subsequently regained or preserved freedom to thousands who would have sighed and died in prisons and caves too dreadful for description, but for PINEL.

As a proof of the rapid progress of improvement in the Bicêtre, where in November I found no restraint, or instrument of restraint, it is now not only curious but even gratifying to me to mention the following circumstances connected with this asylum, as illustrative both of the concomitant evils of the great evil of restraint, and the advantage of discontinuing it. The Bicêtre was visited by my son, and some other members of my family, accompanied by M. Battelle, three months before my own visit to Paris. At that time there were some patients fastened in chairs, of some of whom my son wrote me the following account:

"Passing to an up-stairs room, we found therein a number of beds with a restraint-chair between each, very similar to those formerly used at Hanwell. In one of these sat a poor emaciated creature with a strait-waistcoat over his chest and arms, a broad strap round his waist fastening him to his seat, and a number of linen rags and ropes round his legs; this man was talking loudly and incoherently, but with a breaking voice that showed debility and exhaustion. Being asked by M. Battelle what we would do with such a man at Hanwell, I inquired what the man would do if at large. It was stated by the attendant that he would tear his clothes; and it seemed that he had been five months in restraint, and that at night he was tied down in his bed. I was not surprised to hear it added of him that he 'never slept.'

"On the opposite side of the room sat a man more miserable looking than the other, and restrained in a similar way. I forgot to say that the other man had no shoes or stockings on: this man was in the same condition. The little clothing they had on was very dirty; this second man had not been shaved for some time. I was told that he beat the other patients; and M. Battelle asked me what I would do in *such* a case. I replied, if those two men were brought to Hanwell they would certainly be released immediately, and no doubt some means would be found to keep them from doing any harm. M. Battelle then proposed to the superintendent that this second man should be released, that I might see what he would do. I said I should attach no importance to such an experiment, unless I could remain to see efficient care and kindness substituted for restraint; that the *immediate* effect of release would probably be violence, and so on. However, it was determined to try; and the four stout attendants with us summoned about ten others before venturing to loosen the bonds. We had left the ward and were in an airing court when the patient was brought down with a strong body-guard: and in what way will it be supposed that this furious maniac was venting his rage? By talking affectionately, crying, and kissing the attendants all round. He was then put into a solitary cell, and locked up, as if such was the essence of the non-restraint system."

Recollecting these two cases, it was my intention to notice them, or inquire about them; but M. Battelle had the candour to allude to them without any inquiry being made; and I had the satisfaction to learn that the man so liberated had got well, and that the other patient had also been liberated and was improving. How far the liberation conduced in one case to recovery, and in the other to amendment, I do not pretend to determine; but the circumstances attending the liberation declare a disposition in the officers of the French asylums which is highly favorable to every kind of improvement.

Still, even my experience at Hanwell, where I have had the good fortune to act under a Committee which has uniformly supported the principle of non-restraint for five years, makes me apprehensive lest the imperfect manner in which it is carried out should discredit a principle so excellent. Non-restraint requires for its success certain expedients for the protection of clothing and property. It requires a body of well-chosen attendants; governed with justice and mercy. It requires a well-arranged building. Above all it demands compassionate and intelligent officers to direct the whole. Where any one of these conditions is wanting, the experiment will eventually fail. The real friends of non-restraint in our asylums are yet very few in number. A chief officer who enforces it may be insidiously opposed in every department, with little show of opposition. The old methods were gratifying to all who love power and dislike trouble. A new generation of officers, better educated, and an improved discipline and government of our asylums, securing proper authority to those intrusted with the care and cure of the insane, and alone responsible for it to the public under every disadvantage, will establish the great truth, that the only restraint which is universally to be depended upon is the uniformly kind and indulgent treatment of those whose malady has reduced them to the feeble and wayward condition of childhood.

[The remainder of the notices, containing an account of Charenton, of St. Yon, near Rouen, &c. will appear in our next Number.—Ed.]

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# ON THE REFLEX FUNCTION OF THE BRAIN.

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[*Read at York, before the Medical Section of the British Association for the Advancement of Science, on 28th Sept.* 1844.]

Since it has been generally acknowledged that the brain is the organ of mind, the study of its physiology or laws of action, has acquired a surpassing interest, for whatever men do, in the most comprehensive sense, is connected with its functions. It is, however, as elucidating the nature and treatment of insanity, that its physiology is most interesting to the physician.

A knowledge of the laws and mode of action of this important organ can only be acquired by scientific observation and induction, and it is encouraging and pleasing to know that the multitude and variety of facts from which inductions may be made are proportionate to the difficulties to be overcome. I am not alluding to mental philosophy, but to the advances already accomplished in comparative physiology, which show us that the structure and functions of the nervous system in all animals are subject to the same laws of development and action; that a continuous and harmonious whole is formed out of the multitudinous and disjected parts; and that varied and dissimilar as they appear, each may be made to illustrate the other.

Four years have elapsed since I published my opinion, supported by such arguments as I could then state, that the brain, although the organ of consciousness, was subject to the laws of reflex action, and that in this respect it did not differ from the other ganglia of the nervous system. I was led to this opinion by the general principle, that the ganglia within the cranium being a continuation of the spinal cord, must necessarily be regulated as to their reaction on external agencies by laws identical with those governing the functions of the spinal ganglia and their analogues in the lower animals. And I was confirmed in this opinion by finding, after the investigation and collocation of known facts, that observations and arguments like those satisfactorily adduced in proof of the existence of the reflex function of the spinal ganglia, may be brought forward in proof that the cerebral ganglia have similar endowments. In the present paper I purpose to give these proofs connectedly. I must premise, however, that I entered upon my undertaking with considerable hesitation. I felt deeply the magnitude of the subject, and the important results to which an inquiry of this kind might lead. I felt too, that in advocating the doctrine of cerebral reflex function, I was opposing the opinions of a physiologist to whom deference is eminently due. That gentleman, however, is so devoted to all questions of neurology, and so anxious, I really believe, to arrive at truth, that he, I hope, will willingly permit me to differ from him in doctrine, and give a favorable consideration to my opinions, although opposed to his own.

To render my subsequent arguments clearer, I will first give a short summary of the doctrine of reflex action, as at present received. I need scarcely state that the spinal cord in the vertebrata, is a series of ganglia analogous to those of the articulata. If a centipede be divided into several parts, each segment will move on an external stimulus being applied; if it be decapitated, and the respiratory orifices on one side of the body be irritated by an acrid vapour, it will immediately flex the trunk to the opposite side; if the Geophilus electricus be cut into two pieces, each segment will live and appear vigorous for a fortnight, the caudal portion surviving the cephalic for two or three days. Cold-blooded vertebrates display these involuntary motions very strikingly; thousands of unfortunate frogs have fallen victims to the zeal of physiologists in researches of this kind. If the brain, the organ of consciousness, be removed from a frog by decapitation, it will still attempt to escape when pinched or otherwise injured, and will perform motions, which, if the brain had not been removed, could only have been supposed to be the result of sensation and volition. Indeed it has been inferred from these facts, that the spinal cord, as well as the brain, is endowed with consciousness. It is found, however, that *segments* of the spinal cord possess a similar function. If that portion of the spinal axis of a frog which gives origin to the brachial nerves be separated both anteriorly and posteriorly from the whole cord, so as to be completely isolated, on stimulating the skin covering the forelegs, retraction of the limb irritated and similar reflex movements take place. There can be no doubt, in fact, that each ganglion constitutes the centre of a nervous arc, of which the motor and sensitive nerves, in connexion with it are the two limbs. An impression is made on the peripheral termination of a sensitive nerve; this impression is transmitted to the ganglion as the central axis; there some change, the nature of which is unknown, takes place, but such, that the muscles in connexion with the motor nerves arising from the ganglion are moved. Dr. Hall has termed the sensitive, or afferent, or impression-bearing nerve, incident excitor nerve; and the central axes form collectively the true spinal system, extending from the corpora quadrigemina to the cauda equina.

It is not necessary to reflex action that the irritation be applied exclusively to the peripheral termination of the sensitive or incident excitor nerve, although phenomena so induced, are the most strikingly and most perfectly reflex. The irritation may be applied in any portion of its course, or to the posterior gray matter of the cord (the sensory track) in which the nerve terminates, or to the anterior motor track, or to the cut end of that portion of the motor nerve still in connexion with the muscle. The track of the irritation is from the surface to the muscular fibre through the ganglia; if the continuity of nervous connexion be broken, the irritation cannot reach the muscle.

Irritations may in their origin, therefore, be either peripheral, or derived from the surface; fibrillar, or seated in the trunk of the nerve; and central, or in the axis itself. These variations as to the point from which the irritation commences are connected with variations in the phenomena, and enabled Dr. Hall to arrange excito-motory actions into classes. In hydrophobia, the irritation is a poison circulating with the blood through the central axis; the disease is therefore termed centric, and the excito-motory phenomena are of centric origin; so also the convulsions (the excito-motory phenomena) of asphyxia are centric, because they depend on the circulation of venous blood, instead of arterial, through the spinal cord. The action of the respiratory muscles in sneezing induced by irritation of the schneiderian membrane is reflex, and so with a multitude of vital acts, all admirably elucidated by the law of reflex action.

Motor phenomena, when purely reflex, are of course altogether independent of sensation, or perception, or volition, or consciousness. The mind has no part whatever in their causation or course. A person may, however, be conscious of the reflex acts, and unconscious of the irritation which causes them, as in vomiting from renal irritation, or when the legs of paraplegic patients are jerked on irritating the soles; sensation may also accompany reflex phenomena and volition modify them. Thus, ipecacuan acting on the incident excitor nerves of the stomach will produce the reflex act of vomiting accompanied with the sensation of nausea; or tartar-emetic, circulating with the blood in the medulla oblongata, will induce like phenomena, differing only in being of centric origin, while the others are peripheral. If the soles of the feet be tickled, the legs jerk involuntarily and spasmodically by reflex action, but the sensation of tickling is also perceived. In these and similar instances, volition is often unable to restrain or even to modify the reflex acts. The resulting movements are strictly involuntary. I would particularly call attention to this fact as of some importance in understanding the nature of those reflex acts which I shall adduce as being of cerebral origin, for if any movements of this kind be shown to be strictly involuntary, they must necessarily be considered as reflex excited acts accompanied by sensation—acts which the patient is not merely mentally unwilling, but physically unable, to restrain or modify.

Another remarkable characteristic of reflex phenomena is the harmony of movement in the muscles excited into action by irritation traversing the incident excitor nerves, especially from the periphery. The object of all the purely reflex physiological acts is the conservation of the individual, or of the race. In the words of Dr. Hall, every physiological act of the reflex excito-motor power is obviously designed. If the mucous membrane or skin be irritated, the muscles combine to remove the irritation. This is seen in the two different acts of sneezing and coughing, and also in vomiting. When the tail of a decapitated tortoise is irritated, the hind feet are protruded towards the part, with the object apparently of removing the irritation; if the caudal portion of a bisected scolopendra be irritated, it is immediately erected, and the usual threatening position of the creature when irritated, is assumed. From numerous experiments, especially those of Van Deen and Stilling, it is certain, not only that these acts are independent of the will, but dependent on a special arrangement of the constituent fibrils of the spinal cord. According to Stilling, the posterior gray matter is the portion of the spinal ganglia, on and through which the incident excitor impressions impinge and are diffused, the anterior gray matter, the part in which the necessary arrangements for the harmonious action of the muscles are perfected. These facts are of importance to be remembered in defining the cerebral reflex phenomena, and indeed in detecting the modus operandi of the encephalon as the organ of mind. I have already shown how certain strictly involuntary movements are partly reflex: here we learn how certain strictly instinctive acts may be purely reflex, even when coincident with consciousness.

Another circumstance connected with the purely reflex acts, is that their continued performance is unaccompanied by fatigue. I do not attach much importance to this circumstance, except as proving that volition is closely connected with muscular sensation, but it will have its use in elucidating reflex cerebral phenomena. This incapacity of fatigue is shown in the respiratory muscles; and in the long migratory flights which the instinct of birds compels them to take, as ingeniously suggested by Dr. Hall.

Having thus sketched the history of reflex action, I have now to prove by a series of facts similar to those already stated, that the brain and cerebral nerves are also subject to its laws. I have to show that the cerebral nerves, but especially the optic, acoustic, and olfactory, are incident excitor nerves; that impressions made on them will pass on to the central axis, and there induce the necessary changes in the posterior gray matter, or what is analogous thereto in the cerebrum, and thence impinge on the motor-nerves, giving rise to combined muscular acts, or irregular and spasmodic movements. I have to show that similar acts may have a centric origin, that is, that the exciting cause may be *within* the brain, just as the cause of acknowledged reflex acts may be *within* the true spinal cord. I have also to show that these acts are instinctive in their nature.

Every nerve has its peculiar endowments, and its own machinery of action within the central axis. This is true even of those of the surface—the "true spinal" nerves,—which carry the sensations of heat and cold, and of pain from pricking, tearing, or other mechanical stimuli, for all reflex acts are more decided when the tactile apparatus is irritated. It has been comparatively easy to experiment on these, because their ordinary excitants are readily applied to them; but the optic, olfactory, and acoustic nerves are utterly insensible to stimuli of this kind. Pricking or tearing them, or burning them with strong acids would in no degree excite changes like those induced in the retina by light, after traversing an exquisitely constructed optical instrument; nor excite changes in the acoustic nerve, like those produced by the undulatory strokes of the atmosphere, curiously modified in the auditory apparatus. Experiments on the termination or trunk of these nerves, similar to those made on the nerves of the general surface would therefore be useless. The nearest approach is where galvanic action excites flashes of light, or an acid taste. Sounds duly modified must impinge on the auditory nerve, light duly modified on the optic nerve, if we would ascertain their excitor powers; and physiology and pathology can only supply suitable facts. The symptoms of hydrophobia will perhaps best present the required illustration. In hydrophobia, as in poisoning by strychnia, a poison acting on the blood performs the office of a physiological microscope. But there is this difference, that the former exalts the functions of the sensory track, the operation of strychnia is confined to the motor. The symptoms of this disease constitute a series of excited motor acts, observed with sufficient accuracy, and so well marked as to leave no doubt of their character. The excito-motor nerves whose functions are disordered, are (according to Dr. Hall's views) the trifacial and glosso-pharyngeal, the pharyngeal and laryngeal branches of the pneumogastric, and in some instances the posterior spinal nerves. The reflex motor are the motor branches of the fifth, and of the pneumogastric, and the spinal accessory, and other spinal respiratory nerves. The phenomena excited are spasm of the respiratory muscles, and gasping, convulsions of the face, and occasionally of the trunk or limbs, and an extraordinary development of the instinct of conservation. The patient is ever on the watch, and distrusting all around him.

The true state of the lungs in the hydrophobic gasp appears to be that of complete vacuity of air; and hence the distressing sensation of *want of breath*, or the *besoin de respirer*. That this is the fact appears from a consideration of the phenomena themselves; but in a case related by Dr. Babington, (Vide 'Records and Researches of a private Medical Association,' p 117; London, 1798,) the patient having been put into a warm-bath had a convulsive gasp just when being taken out, and immediately sank to the bottom, and as Dr. Babington states, would have been "suffocated" or drowned, if immediate assistance had not been given; thus proving that the lungs at the moment of the convulsion were emptied of air. Now to do this, the contractile tissues of the lungs themselves must be brought into energetic action, as well as the muscles of respiration, so that the excito-motory phenomena of hydrophobia extend to the muscular fibres of the air-passages.

The acknowledged excito-motory phenomena of hydrophobia may be induced, firstly, through the sensual nerves of touch, as by the contact of water with the surface of the head, hands, chest, the lips and pharynx; 2d, by a current of air impinging on the face or chest. In the majority of cases, the slightest breath of air will bring on gasping and convulsions. These causes act undoubtedly on the incident nerves mentioned. But, thirdly, a bright surface, as a mirror; fourthly, the sight of water; or fifthly, the sound of water dropping; or sixthly, the idea of water, as when it is suggested to the patient that he shall drink; all most indubitably induce excito-motory phenomena as decided and distinct as the first and second causes. Here we have three classes of irritations inducing the reflex acts of gasping and spasm of the respiratory muscles: 1, the contact of water and air with the surface of the face, chest and mouth; 2, the contact of reflected light with the retina; 3, an idea excited by the sound of water dropping, or by the mention of water. I need scarcely remark that the dreadfully painful gasp in hydrophobia is strictly involuntary. The following examples may be mentioned as illustrative of these statements.

*Effects of the contact of reflected light with the retina.* "On Monday, the 26th of September, at half-past nine in the morning, a looking-glass being presented, to her she jumped off her mother's knee in great agitation, and became convulsed." (Case of Eliza Kittle, aged 3 years, by Sir A. Carlisle, in Gilman's 'Prize Essay on the Bite of a Rabid Animal,' p. 171.)—"When a mirror was presented to him he complained in a few seconds of its hurting his eyes. The same convulsive sobbing took place as in the attempt to swallow water, and he turned his head aside with great expression of fear. I gave him money to induce him to look at it a second time, and endeavoured to gain his attention by desiring him to point out to me by the mirror, which of the sores had given him the greatest uneasiness at the time of dressing them; but before he had looked in it a minute, the same effect was produced as before." (Case of John Dyke, aged 9 years, by Dr. Beddoes, 'Med. and Phys. Jour. vol. xx, p. 196.)

*The idea of water excites convulsion.* "On suggesting that he should swallow a little water, he seemed to be frightened, and began to cry out. He turned suddenly in bed, and was simultaneously seized with a momentary clonic spasm of the trunk, greatly resembling emprosthotonos; however, by kindly encouraging him, he soon manifested a willingness to accede to my wish, but the sound of the water as it was poured into the teacup, again brought on a similar convulsive action." (Case of Edward Lloyd, aged nearly 11, by Mr. Thornhill, 'Lond. Med. Gaz.,' vol. xvii, p. 270.)—"On our proposing to him to drink, he started up and recovered his breath by a deep convulsive inspiration. . . . . . . On being urged to try, he took a cup of water in one hand, and a spoon in the other. . . . . . With an expression of terror, yet with great resolution, he filled the spoon and proceeded to carry it to his lips; but before it reached his mouth, his courage forsook him, and he was forced to desist. He repeatedly renewed the attempt, but with no more success. *His arm became rigid and unmoveable whenever he tried to raise it* towards his mouth, and he struggled in vain against this spasmodic resistance." (Case of Odell, aged 28, by Dr. Marcet, in 'Med. Chir. Trans.' vol. i, p. 133.)

*The sight of water induces convulsions.* "Sensibility to touch markedly acute; an embrocation to the external fauces produced convulsions; passed urine of a lemon colour, easily, could view it without horror in a black earthen pot; in a glass the sight produced instant convulsions." (Dr. Vaughan's case of Thomas Nourse, aged 14, in Dr. Hamilton's 'Remarks on Hydrophobia,' vol. ii, p. 434.)—"Desirous of cold air, but it constantly renewed his distress; sight of water excited convulsions." (Dr. Vaughan's case of a farmer, aged twenty-five, in ibid. p. 439.)—"Sobbed deeply at the sight of water, turning away with perturbation." (Dr Vaughan's case of a boy, aged 8 years, bitten by a cat, ibid., p. 441.)—"On water being poured from one basin to another before him . . . . it excited convulsions, and caused him to dash himself against the head of the bed, as if endeavouring to escape from the sight." (Ibid., p. 456. Case of a man, aged 36.)—"Some ale being brought to Dr. Adam while he talked with the patient, he started up from the table at the sight of the mug, and ran away." (Dr. Adams' case of a farmer, aged 40. Ibid. p. 468.)

I shall not now refer to the pathological action of colours, especially of red, on the motor part of the nervous system, because the facts may possibly be disputed. The physiological action is beyond question. The incident excitor influence of odours in inducing convulsions, &c. is, however, well substantiated. So common is this result at Rome, that Sir J. Clark has noticed the fact in his classical work on Climates, and his observation is especially worthy notice, "that it is not disagreeable odours which produce such effects on the nervous system, but the more delicate, and to northern nations, agreeable odours of flowers and other perfumes." So that the results cannot be analogous to those induced by stimulants applied to the nostrils.

Having thus adduced facts proving that the sensual nerves are incident excitor, I need only refer to the phenomena of hydrophobia to show farther, that the impressions made on them at their periphery pass on to the central axes, and there induce the necessary changes in the posterior gray matter, so that excito-motory acts shall result.

I have stated that the idea of water, whether obtained through the eye or ear, will excite the hydrophobic gasp and convulsions; it will also excite a conservative act, the patient, when water is presented to him, is horrified, and immediately attempts to remove it. This movement is strictly involuntary, and not the result of sensation; the water is repelled from the lips with a violent spasmodic jerk, and often in spite of the urgent volitional attempts of the patient to the contrary, just as the hand is snatched away from a spark of fire, or the headless frog leaps from the needle. I have already shown that acts strictly involuntary are simply reflex acts, accompanied with sensation, and that consciousness does not invalidate their character. By what channel then can the idea of drinking, originated in the brain by the presence of water, act upon the respiratory muscles, so as to induce gasping, and upon the excito-motor nerves of the head and arm, so as to excite the convulsive removal of the offered cup of water?

The cerebral nerves being analogous to the posterior spinal nerves, and the encephalic ganglia analogous to the spinal ganglia, the spectrum of the cup of water will traverse the optic nerves, and enter the analogue of the posterior gray matter in the brain causing changes, (ideagenous changes,) corresponding to the idea of water; thence the series of excited changes will pass over to the analogue of the anterior gray matter exciting another series, (kinetic changes, *κινητικος*,) by which the necessary groups of muscles are combined in action. If the cerebral ganglia be but a higher development of the spinal, the medullary, and cortical substance must correspond to the white and gray matter of the cord, and if it be acknowleged, (as has indeed been proved beyond question,) that a combined action of sets of muscles, exhibiting a design of conservation may be developed in the spinal cord without the aid of volition, how can we deny the same qualities to the encephalic ganglia, or in other words, to the cerebral hemispheres and their connexions?

We must consider then each half of the encephalon as consisting of two tracts of cortical, and two of medullary substance; the medullary associating ideas and combining muscular movements; the cortical, conducting impressions to the gray matter, giving rise to sensation and perception, and thence to the muscles, exciting motion. That impressions received by the sensitive nerves excite trains of ideas is generally acknowledged, and that the ideas constituting these trains have a connexion with the elementary constitution of the brain is clearly inferrible from the numerous observations recorded, in which the memory has been only partially abolished, as for example in the case recorded by Dr. Abercrombie. In this instance, a lady had lost the recollection of ten or twelve years only; everything previously to that time she remembered quite well, all else she had forgotten. Indeed, since an infinity of muscular acts are already inscribed within the structure of the anterior gray matter of the spinal ganglia, and require only the appropriate sensory impression to rouse them into action, so ideas may be inscribed, and require only sensory impressions to rouse *them*. The posterior gray matter or its analogue in the brain may then be considered as the seat of associations and trains of ideas.

It will be scarcely necessary for me to state in detail, after the preceding remarks, the facts and arguments which may be adduced to prove that the brain, (comprising cerebrum and cerebellum,) is an excitor of reflex acts. Dr. Marshall Hall has relied mainly upon the experiments of Professor Flourens in support of his opinion that the brain is inexcitor, but it will be seen that these experiments consisted simply in irritating the brain by pricking and tearing. Professor Flourens found that if the central axis be irritated mechanically from above downwards, beginning with the hemispherical ganglia or brain, that no spasmodic motions are excited until the tubercula quadrigemina be touched; it is on irritating that point that excito-motory phenomena first appear, and from that point downwards to the cauda equina, they may be produced by mechanical stimulants. Reflex acts do not, however, consist in convulsive movements of the muscles only, nor are they produced most distinctly in the mode adopted by Professor Flourens. Such irritations differ altogether from even the tactile sensations received by the general surface. As every nerve has its proper endowments, and requires the irritant peculiar to itself, to develop the reflex phenomena indicative of design, so the sensory gray matter in which the sensual nerves end must have its proper endowments and peculiar stimuli. Now, no pricking or tearing could induce these changes that depend on the undulations of an elastic medium. The irritant must be much more closely assimilated to the normal excitation. From Dr. Stilling's researches we know that strychnine is an efficient excitant to the gray motor track, and it is more than probable that a skilful application of narcotics to the sensory track in the encephalon of frogs might lead to important results. There are two modes in which the centric excito-motor phenomena of the brain may be studied: first, by considering the action of narcotics circulating with the blood through the brain, as Dr. Hall has considered the phenomena of hydrophobia and asphyxia; and secondly, by analysing the centric phenomena dependent on functional derangements of the encephalon. Examples of both kinds are numerous; of the latter class is the singular case observed by Mr. Wood, and as it is an undoubted example of cerebro-spinal reflex acts, and illustrative of my previous remarks, as to the centric excitation of ideas and combined movements, I shall analyse its principal phenomena. The patient was a young married female nursing an infant aged 14 months. She first had a painful affection of the right side of the face, pains darting from the cheek to the temple and teeth; the incident excitor branches of the fifth were affected. In two or three days, the excito-motor branches going to the orbicularis and levator palpebræ, were implicated, for an involuntary motion of the eyelids then commenced, in which they were opened and shut with excessive rapidity for about fifteen minutes. Then the excito-motor spinal nerves of the right side were implicated, for the movements of the eyelids were instantly succeeded by involuntary motions of the right leg and arm, continuing for about ten minutes. The motions then intermitted for about ten minutes, and recommenced in *all* the extremities with increased violence. But these movements were not mere spasmodic or convulsive jerks; groups of muscles were brought into action. The palms of the hands beat rapidly on the thighs, and the feet on the ground. The fore arms were rubbed incessantly along the thighs, and the radius rotated on the ulna. The arms were at times extended, and the palms turned outwards. Next day the muscles of the trunk were affected, and the patient was suddenly raised from the chair and as quickly reseated. The motions of the eyelids were followed by vomiting, showing that the centric change had extended to the pneumogastric ganglia. The next day the consentaneous action of groups of muscles were still further extended; the centric changes evidently making progress upwards, for in addition to the previous motions she was now jerked from side to side of the couch-chair on which she sat; she had often a sudden propensity to leap upwards, and was impelled into every corner of the room, striking the furniture and doors violently with the hand. Here decided marks of design appear in the movements. On the following day the acts had become rhythmical, and the centric changes had evidently arrived at some portion of the encephalon connected with the *idea of time;* she frequently danced upon one leg, and in the evening the family observed the blows upon the furniture to be more continuous, and to assume the regular time and measure of a musical air. As a strain or series of strokes was concluded she ended with a more violent stroke, marking the time. The next day, the centric change had ascended higher. The rhythmical movements had become more complex, and changed into a graceful dance. But the changes had now reached the *idea of space* as well as of time, for occasionally all the steps were so directed as to place the foot constantly where the stone flags joined to form the floor, particularly when she looked downwards. An analogous result occurred when she looked upwards; she then had an irresistible propensity to spring up and touch little spots on the ceiling. In both these movements, the optic nerve exhibited an incident-excitor function. The tune was now discovered that she danced to; it was the air of the "Protestant boys," popular in the neighbourhood, and she informed Mr. Wood that there was always a tune dwelling upon her mind, which at times becoming more pressing, irresistibly impelled her to commence the involuntary actions. The centric changes here ceased, which had induced this alteration of sensory function, and which had reproduced in fact the idea of the air with such force that it impinged on the motor track, and there excited consentaneous reflex acts, in spite of the utmost volitional effort of the individual. The motions were stopped by interrupting the action of the excitor (the musical air) on the motor track, for so soon as the time was broken, or a continued roll played on drums, the motions ceased. The patient had several relapses; the eyelids and muscles of the face were only affected in some of these, in others, the muscles of the chest, larynx, neck, and back. In one attack she rotated swiftly.

Having traced the progress of the symptoms of this case, I need not recapitulate them, as illustrative of reflex cerebral function. If the brain be indeed the organ of ideas, and the cerebellum of combined movements, the inference is manifest, that they are both excitors of reflex actions. The case is one of many similar recorded by authors: in this, fatigue was felt; in others, the violent efforts did not cause weariness.

What I have just detailed is an example of idiopathic centric change, but encephalic reflex phenomena may be excited by narcotic poisons. An instance of this is related by Mr. Duffin, (Medical Gazette, vol. xv. p. 194,) whose little girl, aged 2½ years, was poisoned by the seeds of stramonium. In about an hour after eating the seeds, symptoms not unlike those of hydrophobia came on. There was "a flushed countenance, wildness of manner, suffused eyes, maniacal expression, ineffectual efforts to vomit, incoherent and rapid utterance, which very soon became wholly unintelligible, screaming, catching at imaginary objects in the air, or rather, striking at them—for it was evident that these spectra were of a frightful nature, since, at the moment of darting out the hand in the direction where the eyes were fixed, she always, suddenly and with great vehemence, withdrew herself, expressed the utmost terror in her look, and then hid her face, at the same time screaming and sobbing violently. Her eye would, to appearance, follow the imaginary object for a moment or two before she made the effort to escape from its supposed approach. She rapidly became furiously delirious, struck at, pinched, or attempted to bite, every person who came near, or any object that was offered to her.

"Within the space of two hours and a half from the time that she must have swallowed the poison, the child had not only lost the power of utterance, but that of voice also. She could now only utter a hoarse croaking sound, alternated with a sonorous, croupy, barking cough; and was unable to swallow, in consequence of the violent spasm which affected the muscles of deglutition when she made the effort. This state of spasm, judging from the nature of the cough, and the croupy character of the inspiration, pervaded the muscles of the larynx. She now knew no person, and had been wholly insensible to surrounding objects for above an hour and half. The pupils were dilated; had been so from the first, and continued in this state till she died. The voluntary power of the extremities was gone, and the limbs were violently agitated by spasmodic twitching and jactitation (not by regular convulsions), alternately with short paroxysms of tetanic spasm (opisthotonos)."

In this, as in the previous example, there is a continued series of reflex phenomena of centric origin, implicating the cerebrum as well as the medulla oblongata, all originating in one cause, namely, the circulation of a poison with the blood, and acting, not mechanically by effusion or pressure, but directly on the intimate organization of the central axis, and developing a succession of changes, commencing with the exaltation and ending with the extinction of its functions. Amongst the insane, especially the idiotic and fatuous, examples of combined excito-motory movements of cerebral origin, are not unfrequent. A male patient in the York County Asylum, aged 44, and fatuous for thirty-seven years, cannot pronounce any word distinctly, nor understand what is said to him. He constantly holds a stone, or other substance, in the palm of one hand, and moves continually, as if slowly waltzing. Mr. Alderson, the resident medical officer, kindly assisted me to time his movements, and we found that he performed twenty steps in fourteen and a half or fifteen seconds, with the greatest regularity, and we measured his steps repeatedly. Another man, aged 34, in a state of dementia, stands for hours together, moving his hands and feet synchronously, in a way not easily to be described. He was found, when timed, to make twenty steps in ten and a half or eleven seconds, with unvarying regularity. In these examples, as in the case of chorea, the cause of the movements was centric; and, as the latter were connected with an idea of time, its seat was undoubtedly cerebral.

There is one other excito-motor phenomenon I would refer to. In hemiplegia, an experiment is occasionally made by nature: a functional change is induced in that part of the central axis devoted to language. In these cases, when the will is directed to the enunciation of one word, as "bread," the individual utters another word, as "boots." Sometimes it is a letter only that is thus mispronounced, as *z* for *p*; and sometimes the words of foreign languages are mixed up in confusion, in spite of the individual's efforts to articulate aright. This phenomenon is analogous to the irregular acts of groups of muscles.

My paper having already extended to so great a length, I will only briefly refer to the instinctive and emotional acts. If the effects of emotions be analysed, it will be found that they act principally upon the excito-motory system, relaxing the sphincters, and inducing vomiting, dyspnœa, sighing, sobbing, gasping, &c. Examples of all these might be adduced. Both the instinctive and emotional acts are essentially conservative; and both so act on the muscular system that a sensation of fatigue is not felt during their action on the motor system. Both may be traced from the simple reflex phenomena to the more compound. Thus, tickling the soles of the feet causes a spasmodic jerking of the limb; but in many instances it will excite violent and involuntary laughter: reflex laughter may also like weeping, sighing, hiccough, gasping, &c., be of centric origin. It is seen in hysterical and hemiplegic cases, and I have myself witnessed it as a sequel of epilepsy from tumour on the cranium; the laughter alternated with weeping, and was accompanied by partial paralysis of the lingual and pharyngeal muscles. In this case, the whole reflex phenomena were of centric origin.

It is only by the theory I have advanced, that we can explain the instinctive acts of animals. Like the purely reflex conservative phenomena, they are altogether dependent on the connate structure of the cerebral ganglia. A young brood of partridges, tended by a bantam hen, will immediately cower and squat motionless, if a stuffed polecat be placed within their view, and they will peck at grain and insects before they have got rid of their shell. Bees will begin to gather wax and construct cells, within twenty-four hours of their being hatched, and before their wings are dry. In all these the acts are in every respect analogous to the compound conservative acts of the true spinal system; the only differences being in the nature of the sensory impression which excites them, in the endowments of the nerves along which the impression is conducted, and in the composition of the central axis.

## APPENDIX.

I. *On the tone of the muscles.* The state of the muscular system termed tone, is allied in its origin to the muscular contractions of excito-motory movements.

As special impressions on incident excitor nerves give rise to special combined movements, so the general impressions on the whole surface of the body and on the mucous membranes excite the cerebro-spinal ganglia into action generally, and thus a corresponding result is obtained; namely, a general reaction (through the motor nerves) on the whole muscular system. That the cerebral nerves have an important part to perform in the maintenance of this general excitation of the nervous system, and the resulting tone of the muscular system is manifest from the phenomena of sleep. Many of the common muscular acts of the waking state are excito-motory in their nature, as for example, the tension that maintains the lineaments of the face, and keeps the eyelids, head, limbs, and trunk in their usual position. When sleep comes on sensory impressions cease to act on the brain, and the muscles relax. The eyelids then drop over the eyes; the head droops; the limbs become flaccid and uncontracted. If the incident excitor nerves of the abdominal viscera were also liable to sleep, their ordinary functions would be interrupted, and the flexor muscles (so constantly affected in spasmodic affections depending on irritation of the mucous membrane,) would lose that excess of tone they possess over the extensor. If the nerves of the heart and lungs could undergo this change, death would speedily ensue. In the natural condition the incident excitor action of the sensitive branches of the vagus is only diminished in intensity; the heart and chest act more slowly. Sleep appears to be confined to the encephalic ganglia; when it affects the medulla oblongata or spinal ganglia, the change induced is a morbid change. The following may be termed

*A case of sleep of the respiratory ganglia.* A West Indian, a surgeon, consulted Sir Charles Bell. He stated that "on falling asleep, just at the moment when volition and sensibility cease the involuntary motions also stop, with a sensation of death, under which he awakes generally convulsed. His medical friends have sat by him and watched him, and they have found that when sleep is overpowering him, the breathing becomes slower and weaker, the heart and pulse also fall low, and cease to beat as sleep comes on, and after a short time he awakes in terror." (Appendix to Papers on the Nervous System, by Sir Charles Bell. Case 170.) It would appear that incubus or nightmare consists in sleep of the respiratory ganglia.

The tone of the muscular system may be maintained (just as excito-motory acts may be excited) by changes *within* the cerebro-spinal ganglia, or, in other words, by centric changes. We have a remarkable exemplification of this general principle in those examples of somnambulism in which the individual is perfectly insensible to external impressions. In these the nerves sleep; the brain wakes. But the contrary may happen; the cerebro-spinal ganglia may cease to react so as to induce muscular tone, while the incident excitor nerves are awake. Something like this occurs when certain emotions (as fear) excite such violent nervine changes as to interrupt the action and reaction of the central ganglia on the incident excitor and reflex-motor nerves. In such an instance as this, muscular tone is not only destroyed but the contractility of the sphincters is abolished. The action of certain poisons on the central ganglia is precisely analogous. Tartar emetic, tobacco, &c. by their action on the cerebro-spinal axis, destroy the tone of the muscles, more or less completely.

II. *The diffusion of impressions with reference to reflex cerebro-spinal action.* When an impression is made on an afferent nerve an instantaneous change takes place in the gray matter of the ganglion in which the nerve terminates, and this is propagated to the roots of the muscular nerves. But it has been generally forgotten that this is not all; a change passes also along the twigs of the sympathetic nerve connected with the ganglion, and so the secreting as well as muscular and sensory structures have an influence communicated to them. In short, a change is effected in *all* the fibrils entering into the composition of the ganglion. The proofs of this proposition are various: Firstly, it is actually observed to occur in the lower forms of organized matter. Secondly, it has been found by experiment, that the influence of impressions is diffused through a *chain* of connected ganglia, as for example, when the cord of a frog is subjected to experiment. (Vide Stilling's Researches in Br. and For. Med. Rev. vol. XVII, p. 399, and Propositions 12 & 13, p. 400.) Thirdly, pathological observations agree with the results of vivisection. In analysing a case of paraplegia, following a blow on the neck, and detailed by Dr. W. Budd, Dr. Carpenter makes the important deduction "that all influences from impressions on incident nerves are diffused through the cord" (Principles of Human Physiology, 1st ed. p. 132). This principle of the diffusion of influence is applicable as well to the encephalic as to the spinal ganglia. The motor track throughout the cerebro-spinal axis is distinctly influenced by every act of volition, and the whole of that axis, whether sensory, motor, or sympathetic, by every emotion. The action of the heart, for example, is accelerated, as is well known, by very slight muscular efforts; the simple act of rising from the recumbent to the upright posture accelerating the pulse. This diffusion of the volitional influence is seen in diseases of the motor system: in chorea it produces irregular muscular movements; in epilepsy, the motor excitement resulting will prevent the fit.

That influences from emotional impressions are diffused through the whole cerebro-spinal axis, is one of the best-established facts in physiology. The effect of vivid emotions on the functions of the viscera is instantaneous. The skin, intestines, kidneys, liver, heart, salivary and lachrymal glands, and capillaries of the surface, are notoriously influenced by them: Dr. Erdmann, of Dresden, relates a case in his Medical Observations, of a boy whose face, when he was put into a passion, became quite pale on one side and red on the other; and there was an exact boundary along the centre of the face, proving the common union of the sympathetic motor and sensory twigs in the encephalon. The influence of emotions on the hue of the chamelion, and on the colours of certain fishes, strikingly illustrates their operation on the whole system. No class of causes are so influential in exciting convulsions as the emotions, but, like the volitional stimulus, the emotional excitement will *prevent* excito-motory phenomena, and even cure paralysis. Both fear and anger have been known to have this result. It is manifest too, that the diffusion of the influence of emotional impressions is not limited to the true spinal system, or to the ganglia at the base of the brain, for the exaltation or confusion of the understanding, often amounting to insanity and an abolition of consciousness consequent upon their operation, plainly shows that they not only rouse it, but their influence is diffused through the cerebral hemispheres,—the organs of intellect.

Many curious phenomena are singularly illustrative of this diffusion of impressions, and are easily explained by it. Dr. Stilling points out its share in exciting the emotional cries and conservative acts, when disagreeable impressions are made on afferent nerves. (Br. and For. Med. Rev. vol. XVII, p. 139.) The influence of light on the nervous system in maintaining its activity and tone, and preventing sleep is well known. This influence is subject to the law of diffusion. Jungken was acquainted with two persons who were instantaneously seized with asphyxia if light were excluded, or awoke in a state of suffocation if their taper had gone out. A case of this kind is stated in Dr. Forbes's translation of Laennec. In these instances the incident excitor impression of light maintained the activity of the respiratory ganglia, prevented them in fact from going to sleep. The diffused influence of light will produce an opposite effect. Obs. 86, in Bordeu's 'Recherches sur le Pouls,' is that of a very aged female in whom a single ray of the sun or the light of a candle excited an abundant sweat, so that she was obliged to be always in the dark. Many of the phenomena of mesmerism may be explained on the hypothesis of a diffusion of the influence of impression; indeed the theory is as capable of extensive and important applications to therapeutics and hygiene as the excito-motory doctrines.

III. *The substrata of psychical phenomena.* The question necessarily arises how is it that when an impression is thus diffused through the cerebro-spinal axis, certain groups of muscles, the contractions of which constitute instinctive, emotional, consensual, and volitional actions, are excited into energy. The answer must be sought in a knowledge of the histological composition of the cerebro-spinal axis, and of the nature of the bio-molecular changes induced therein, and on the periphery, by the qualities of matter. These adapted acts differ very widely from mere convulsive movements or tetanic spasms, both in their nature and mode of excitement. There is manifestly a mechanism on the periphery from which the sensitive nerves commence, as well as in the centre, appropriate to the inner or ganglionic mechanism. The doctrine of a molecular organization within organized structures, such as that it shall correspond and be appropriate to given stimuli received by appropriate organs, necessarily constitutes the basis of all inquiries into the laws of action in those structures. And there can be no doubt, such is the magnificent uniformity in the immense diversity of creation, that the laws of action of the agent and reagent in vital phenomena, are as definite as those operating on chemical phenomena, could we but effect a sufficiently minute analysis and induction.

It may be useful to state some general principles respecting the *ideagenic* and *kinetic* substrata, alluded to as making up the nervous centres. In the first place, it is to be observed that they are as invariably transmissible from parent to offspring as any other portion of the system, and are subject to the same laws of development; they are therefore as much a part of the animal as its nerves or blood-vessels. This proposition must be steadily remembered as an important clue to an explanation of the origin and mode of action of the substrata in the cerebro-spinal axis. Secondly, these *ideagenic* and *kinetic* substrata may be modified, as any other organ of the body, by intermixture of species or genera; or new substrata may be formed by the reaction of external stimuli on those already existing; or, in other words, new instincts may be acquired and be transmissible. This proposition is scarcely less important than the preceding. Thirdly, these substrata may be persistent as a part of the organism, and continue to be manifested by acts long after the necessity for those acts, as conservative of the individual or race, has ceased. Fourthly, these substrata may be dormant for a lengthened period from the want of a reagent, and appear extinct, but will reappear so soon as the impressions adapted to their action are received by and conveyed along the afferent nerves. Fifthly, as there is a general development of organized beings, as well as of races, those substrata which are common to all will be the most indestructible in each, and the instinctive acts of which they are the basis the most decided and permanent.

The illustration of these propositions need not be numerous. The invariable sameness and permanence of the instincts of the hymenoptera among insects is one of many similar examples. The crossing of breeds of domestic animals and the mixed qualities resulting, is a familiar illustration of the second proposition. Many examples of acquired instincts are on record; several of the best authenticated are detailed by Dr. Carpenter in his 'Principles of General and Comparative Physiology,' 1st ed. § 549. The following is an interesting fact of this kind. A troop of cavalry, which had served on the continent, was disbanded in York. Sir Robert Clayton turned out the old horses on Knavesmire to have their run for life. One day, while grazing promiscuously and apart from each other, a storm gathered, and when the thunder pealed and the lightning flashed, they were seen to get together, and form in line in almost as perfect order as if they had had their old masters on their backs. Fishes can acquire these substrata. Mr. Ellis, in his 'Polynesian Researches,' says, that he has frequently seen a large eel come to the surface of the water when his master (a young chief) *whistled*, and take food from his hand. The persistence of these substrata is shown by the instinctive actions of the dog when about to go to rest. The best bred Blenheim spaniel will scratch his cushion and turn himself round and round (the instinctive act of the wild dog) before going to rest. Like the fox, domestic dogs will hide their food in the earth. A friend of mine lost two fowls, and it was only after some time, on finding the legs sticking out of the ground, he discovered that a handsome Blenheim bitch in his possession had killed and hid them. The domesticated squirrel will hide his nuts in the hay of his cage, but he will also place them on the carpet, or a mahogany table, and giving them a few pats, (just as when hiding them in the hay,) leave them. The reexcitement of dormant substrata is illustrated by the instincts of the wild horses in South America. The following observations, made by Sir R. H. Bonnycastle, in his work on Canada, strikingly exhibits the existence of substrata dormant in man, until the appropriate stimulus is received: "The best specimen of an Indian Missionary I am acquainted with in Upper Canada forgot all his instruction, all his acquired feelings and habits, when he witnessed with me the war-dance of heathen and perfectly savage warriors. He had been carefully educated from a boy, was modest, intelligent, and well-bred.... .....Yet he grinned with savage delight at this exhibition of untutored nature."

The fifth proposition regarding these substrata is one of most extensive application. Just as in man certain organs are rudimentary, so also certain of these substrata are rudimentary; just as the osteology of man is formed on one general type, varied only to suit his mode of existence, so also these substrata are based on a fundamental type varied in like manner. And just as monstrosities and physiological changes occur, marking a retrograde step to a lower form of organization, so are the substrata of lower instincts developed and excited into action. A remarkable instance of this has been recently published. "A perfectly idiotic girl, in Paris, having been seduced by some miscreant, was delivered of a child without assistance. It was found that she had *gnawed* the umbilical cord in two; in the same manner as is practised by the lower animals. It is scarcely to be supposed that she had any idea of the *object* of this separation." (Dr. Carpenter's Physiology, 1st ed. p. 219.) Thus the kinetic and ideagenous or sensorial textures of the ganglia of all animals are interwoven with those of the human organization. It is only by a hypothesis of this kind that we can explain various instinctive acts in man. The incident excitor action of water on the respiratory organs is an anomaly, unless we can attribute it to a substratum belonging to a lower grade of development.

The qualities of water are not stimulating to the skin; its contact excites no pain or irritation on the general surface, and yet, when dropped on the head or chest, as in a shower-bath, the larynx is immediately closed, and an instinctive feeling of terror excited. When the substratum corresponding to the impression it makes on the afferent nerves of the head, body, and thorax is morbidly excited, as in hydrophobia, or certain forms of spasmodic asthma, the gentlest contact of a blander matter than water, but inducing a similar impression—the air we breathe—will excite the horrid feeling of impending death from suffocation, and instinctive terror in its wildest form.

IV. *Probability of the theory of substrata appropriate to psychical phenomena.* This theory of a nidus or substratum, for the reception of impressions and the excitation of ideas and acts, is by no means new. Prochaska adopts it distinctly with reference to the spinal cord; and Hooke, Locke, Haller, and others, with reference to the brain. Haller says expressly, "Eas mutationes in sensorio conservatas *ideas* multi, nos vestigia rerum vocabimus, quæ non in mente sed in ipso corpore, et in medulla quidem cerebri ineffabili modo incredibiliter *minutis notis* et copiainfinita inscriptæ sunt." Hooke went even so far as to theorize on their formation, and estimate the numbers that could be made in a day. The theory flows necessarily from the proposition that the brain is the organ of the mind; it is also a necessary inference from all that we know of the functions of the nervous system. The principal objections have been, first, that it leads to materialism, and secondly, that the immense multitude of ideas and consensual acts renders such a texture of the constituent fibrils impossible. I shall defer a notice of the first objection, which can easily be shown to be quite groundless. This second arises in the mind, because we have neither sufficiently examined nor contemplated the more recondite properties of matter. We know that the divisibility of matter is so great as to elude all our means of research, and to give rise to the idea of its *infinite* divisibility. The microscopic forms of organized matter are wondrously minute; and when we know certainly that beings invisible to the naked eye have structures as diverse as those of the largest animals, and as perfectly adapted to their modes of existence, the histological constitution of which defies even the powers of imagination, there can be no ground for surprise at the infinite variety of ideas interwoven into the connate structure of the cerebro-spinal axis, or written during life on the brain. The sensible points of the retina, according to Weber and Smith, measure no more than the 1-8000th inch in diameter. If, adopting the views of Mr. Solly, we consider the convolutions of the brain as made up of an extensive surface of cineritious neurine, we may estimate the number of ideas, the substrata of which may be contained in a square inch, as not less certainly than 8000; and as there must be an immense number of square inches of surface in the gray matter extended through the cerebro-spinal axis of man, there is space sufficient for millions.

V. *The consensual movements.* The harmonious and consentaneous action of muscles and groups of muscles (just as the purely reflex and instinctive acts) differs from mere spasmodic contractions. The evolution of consensual acts from the lower to the higher forms of development, takes place also after the same laws. In the primary forms, the irritability of the muscular fibres excited them according to a fixed principle of consentaneity and adaptation. The hollow muscular tubes, the heart, arteries, and urinary bladder, are instances of the lower forms in which groups of *fibre* act consentaneously. Next come consentaneous action of groups of antagonizing *muscles*, flexors and extensors, pronators and supinators, adductors and abductors. The spasms of tetanus and epilepsy result from a morbid influence on the substrata of these consentaneous acts. To a higher grade of this kind belong the substrata of the class of co-ordinate muscular acts observed in rotation, progression, retrocession, flying, swimming, and the like, the general movements of the lower vertebrata. Allied to these are the substrata which determine the gait, bearing, language, tone of voice, expression, &c. of the individual, and which bring them into relation with the emotional and instinctive acts. They differ from the preceding in this, that they are due to special groupings peculiar to the individual or the race. They follow, however, the law of transmission from parent to offspring, guiding the other substrata referred to above. A peculiar gait, a certain kind of frown, a hitch of the shoulder, a tone of voice, are all the result of co-ordinate muscular acts taking place independently of the volition of the individual, and almost always without his consciousness, and appear as certainly in the offspring as any other corporeal peculiarities. Co-ordinate or consensual substrata, like those ministering to the instincts, may also be acquired and appear as *habits;* and these may also be transmitted, though not usually. Lastly, the substrata of the highest co-ordinate movements, namely, those dependent on the intellect, and seated in the cerebral hemispheres, are the substrata on which the acts of speaking, singing, writing, painting, music, &c., and the practice of the manual employments, depend. These are almost always acquired, and seldom transmitted; but on this point, especially with reference to the last class, observations are wanting. According to these views, any attempt to localize the substrata of the coordinate or consensual acts would be futile. Like those of the instinctive and emotional movements, they extend through the whole cerebro-spinal axis. The stimuli that excite them are of course local in their origin, and as diverse in their character as their origin.

VI. *The association of ideas.* Like the association of movements, the true explanation of the association of ideas is to be found in the doctrine of the reflex functions of the brain. The mode of action of the sensory gray matter is strictly analogous to that of the motor gray matter, both with reference to its substrata and the diffusion of afferent impulses through it. Insanity and dreaming present the best field for investigating the laws of that extension of action from one portion of the brain to the other, by which ideas follow each other in sequence. An interesting example for study is now in the Retreat near York. This person seems utterly will-less. He expresses the ideas as they spontaneously arise in associated sequence, the combinations being singularly varied, but traceable to a common root, or centre of impulse. Researches of this kind, whether instituted on the insane, the somnambulist, the dreamer, or the delirious, must be considered like researches in analytical chemistry. The reagent is the impression made on the brain; the molecular changes following the application of the reagent are made known to us as ideas. In chemical analysis we know the molecular changes only by the change in form, refractive powers, and other circumstances, induced by the reagent; in cerebral analysis we *feel* the change, or observe its results on the efferent nerves. It is very probable that only on researches of this kind can a scientific spiritualism be established, and through them the link seized that connects the spiritual with the material world.

VII. *The psychical position of man in creation.* The law of unity of type and function in animals, applied in the preceding pages to the function of the cerebro-spinal axis in man, has shown (what is necessarily deduced from the law itself) that the transition of structure and function is gradual, and consequently, no strong line of demarcation can be drawn between the manifestations of its various functions. The automatic acts pass insensibly into the reflex, the reflex into the instinctive, the instinctive are *quasi* emotional, the emotional are intellectual. This gradation of structure and function observed in the nervous system, is observed also with reference to all other structures of his body. Man is at the head of a vast ascending scale of animal life, so extended in its connexions downwards, that for the present purpose it may be considered as infinitely extended. With our existing knowledge of the uniformity of the laws of creation, the deduction is absolutely incontrovertible, that the scale of being is not truncated at man, and that beyond him there cannot be a dark, unpeopled void. The law of gradation of development vigorously pushed to its legitimate conclusions points out an infinite gradation of being *above* and *superior* to man. That we cannot see such beings, nor demonstrate their existence is a necessary, result of our position in the scale, and no proof whatever of their non-existence. The worm knows nothing of man, his works, or his actions: nothing of the sun or the stars, or of the beings swarming around it: and so with reference to the spiritual world, the world around and above *us*—our organs may be, and doubtless are, as imperfect as those of the worm with reference to the world around and above *it.* Man is then at the foot of another scale of beings, the highest of which, *at least,* as far transcends man, as man transcends the zoophyte. This proposition, I repeat, is the unavoidable inference from our present physiological knowledge, and is a complete answer to those good, zealous, but not wise men, who think science leads to scepticism and irreligion. It leads to a rational faith utterly opposed to arrogant infidelity.

YORK; *December* 24, 1844.

# OBITUARY.

### JOHN ABERCROMBIE, M.D.

It is our mournful duty to announce the sudden and premature decease of this great and good man. The sad event, which has deprived the profession of one of its brightest ornaments, and Edinburgh of one of her best citizens, took place at his residence in York Place, on Thursday the 14th of November, between the hours of nine and ten o'clock in the morning. About nine he finished a hearty breakfast; his carriage was waiting for him at the door, and some patients were likewise in attendance,—when, from his being unusually long in leaving his private room, his servant entered it, and found him lying prostrate and dead on the floor with his arms extended. From the position of his body, and from other circumstances, which we ascertained, but which it is not necessary to particularize, it would appear, that he had hurriedly advanced a few steps towards the door after feeling ill, and had then, when he found himself falling, extended his arms to save himself, but without doing so in any degree, as we infer from the nature and severity of a bruise upon the nose:—it was evident, in fact, that he had come to the ground a helpless and a lifeless weight.

Dr. John Abercrombie was born on the 10th October, 1781. His father was a respected clergyman of the Established Church of Scotland, in the city of Aberdeen. He graduated at the University of Edinburgh on the 4th of June, 1803, writing for his thesis, "De Fatuitate Alpina." We have often been told by one of his early friends,—one who was called as suddenly as he was from the shifting scenes of time,—that as a Student of Medicine, Dr. Abercrombie displayed that same deep, practical, unobtrusive piety, which in after life was the main-spring and regulating principle of his every action, the charm by which his talents were enabled to command the confidence of his patients and of the profession to an extent, if equalled, certainly never surpassed by a physician. After a short period of study in London, Dr. Abercrombie was admitted a Fellow of the Royal College of Surgeons of Edinburgh, upon the 12th of November 1804, upon which occasion he submitted to the President and Council of that body his 'Probationary Essay—on Paralysis of the Lower Extremities from Diseased Spine.' This paper is characterized by the same clear and terse style which is to be seen in all his subsequent writings. He now took a house in Nicholson street, and commenced practice as a general or family practitioner. At this period he devoted a great portion of his time to attendance on the poor, as one of the medical officers of the Royal Public Dispensary. In 1811, and subsequent years, when he had around him an effective body of ardent pupils, to whom he had succeeded in imparting much of his own enthusiastic passion for the careful clinical study of disease, he divided the city into districts, to each of which he attached several pupils. By his own zeal, and the hearty co-operation of his pupils, he thus became the instrument of much good to the poor; whilst at the same time he furnished himself with that rich field of observation which afterwards formed the basis of his future fame, eminence, and skill as a pathologist and practical physician. About this time he was appointed vaccinator along with Drs. Bryce and Gillespie; and with these eminent colleagues he took an active and efficient part in the introduction of the important discovery of Jenner.

In 1806, he published in the 12th volume of the 'Edinburgh Medical and Surgical Journal,' "A case of Cynanche Laryngea;" and in the Quarterly Report of the Royal Public Dispensary, which appears in the same volume, are to be found some remarks from his pen on "Tobacco injection in Dysuria." After this he continued for many years a frequent contributor to that celebrated miscellany; and, indeed, a large proportion of the cases which formed the basis of his works on the 'Pathology of the Brain,' and of the 'Abdominal Viscera,' originally appeared in its pages.

On the death of Dr. Gregory, in 1821, he became a candidate (along with Dr. John Thompson and others) for the chair of Medicine in the University of Edinburgh.* At that time, however, political feeling and professional influence of a kindred bias, were omnipotent in the municipal council of Edinburgh; and hence, neither Abercrombie nor Thompson was appointed.† It was at this time that Dr. Abercrombie gave up general practice, and became exclusively a consulting physician. To enable him to carry out this change with propriety, he became a Fellow of the Royal College of Physicians.

In his letter to the Lord Provost and magistrates, announcing himself as a candidate for the chair of Medicine, he gives the following list of his works:

1. On Diseases of the Spinal Marrow.
2. On Dropsy, particularly on some modifications of it, which are successfully treated by bloodletting.
3. On Chronic Inflammation of the Brain and its Membranes, including Researches on Hydrocephalus.
4. On Apoplexy.
5. On Palsy.
6. On Organic Diseases of the Brain.
7. On a Remarkable and Dangerous Affection, producing difficulty of breathing in infants.
8. On the Pathology of the Intestinal Canal. Part I, On Ileus.
9. Ditto. Part II, On Inflammation of the Bowels.
10. Ditto. Part III, On Diseases of the Mucous Membranes of the Bowels.
11. On the Pathology of Consumptive Diseases.
12. On Ischuria Renalis.

In 1824, appeared in the 'Medico-Chirurgical Transactions of Edinburgh,' two memoirs by him, the one "On the Pathology of the Heart," and the other on "The Nature and Origin of Tuberculous Diseases." His famous work on 'Diseases of the Brain and Spinal Cord' was published in 1828. This was followed by an enlarged edition of his work on the 'Intestinal Canal,' under the new title of a 'Treatise on the Diseases of the Abdominal Viscera.' His well-known work on the 'Intellectual Powers and the Investigation of Truth,' appeared in 1830; and in 1833, his 'Philosophy of the Moral Feelings.' About this time also he published a pamphlet entitled 'Suggestions on the Malignant Cholera,' and a short treatise on the 'Moral Condition of the Lower Classes in Edinburgh.' Besides the works which we have mentioned, he published several beautiful and highly useful Christian tracts, which were lately reprinted in one volume; and but a few weeks before his death he brought out what is perhaps the best of all his religious writings, Part First of his 'Elements of Sacred Truth for the Young.' We quote the concluding paragraph of the introduction to this little work, as well calculated to pourtray the goodness of the author's heart: "Should the work on which the author has thus entered be found useful as a manual, he will esteem it the highest distinction that can be conferred upon him. By the favour of the public, his former writings, on various subjects, have attained a most extensive circulation, and have received the most gratifying marks of approval. The ambition that now remains to him, is to have his name associated with those solemn and sacred hours, when the Christian parent calls around him the children of his heart, and, feeling all the uncertainty of life which is passing over them, seeks to raise their minds to a life that is never to end."

In 1834, the University of Oxford, in token of respect, conferred upon him the honour of its medical degree.

In 1835, he was elected Lord Rector of the Mareschal College of Aberdeen. The excellent inaugural address which he delivered to the students upon the occasion of his installation was extensively circulated at the time, and afterwards published under the name of 'Culture and Discipline of the Mind.'

On the accession of her present Majesty to the throne in 1837, Dr. Abercrombie was appointed First Physician to the Queen for Scotland; and at the period of his death he was the President of the Royal Society of Edinburgh.

In 1841, Dr. Abercrombie had a slight attack of paralysis, from which, however, he soon and completely recovered; and up to the moment of his death enjoyed good health. He was never known to complain of any symptoms indicating disease of the heart.

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* His letter of application to the Town Council, which is now before us, is dated 19, York Place, 2d May, 1821.

† The death of Dr. Gregory occasioned several changes in the University. He was succeeded in the chair of Medicine by Dr. Home, then Professor of Materia Medica, and Dr. Home was replaced by Dr. Duncan, the Professor of Medical Jurisprudence, whose place, thus vacated, was supplied by Dr. Christison.

As has been already stated, Dr. Abercrombie died on the 14th of November. On Saturday the 16th an examination of the body was made by Mr. John Goodsir, in presence of various medical gentlemen.

*The encephalon* was in every respect healthy, with the exception of the arteries, which exhibited, in a very marked degree, the atheromatous deposit. There was no trace of old or recent effusion of blood. The internal carotids, at their entrance into the cranium were rigid, and somewhat dilated. None of the vessels were preternaturally distended. The ventricles contained a considerable quantity of serum ; and were of great size, corresponding to the enormous development of the encephalon, which weighed sixty-three ounces avoirdupois, being therefore one of the heaviest brains on record.*

*The pericardium and heart, &c.* On opening the pericardium, the heart was found enclosed in a mass of coagulated blood, which completely concealed it. On removing this clot, and raising the heart from the pericardium, a rupture, half an inch in length, was found on the posterior surface of the left ventricle, half-way between the left edge of the septum, and about midway between the base of the ventricle and the apex : the direction of the rupture was that of the axis of the ventricle; it did not extend into the cavity of the heart. The ruptured surface was ecchymotic ; as was likewise, in its immediate neighbourhood, the substance of the ventricle itself, although covered by the pericardium. The heart was enlarged and dilated in a very slight degree ; it was considerably loaded with fat ; and very soft in texture, as if from imperfect nutrition. The aorta presented a considerable quantity of atheromatous deposit. The valves were not altered in form, though they presented some atheromatous spots. The orifices of the coronary arteries were dilated ; and throughout the heart, they had undergone the atheromatous degeneration ; a branch of one of them passed down to the rupture, but its opening into the rupture could not be detected. A bristle was introduced into the ruptured orifice of a considerable coronary vein, and easily passed up towards the base of the heart.

The other viscera were healthy.

*Cause of death.* It appears then that the cause of death was a mechanical hindrance to the contractions of the heart, from effusion of blood into the pericardium by ruptured coronary arteries and veins. It is probable that the heart, softened from impaired nutrition dependent on the atheromatous state of its arteries, was torn, in the manner described, during its contraction.

FUNERAL. Although it was the wish of his family, that the funeral should be strictly private, the applications for leave to attend were so numerous as to render it necessary to extend the arrangements to a considerable degree. On leaving York place, the procession consisted of the hearse, his own empty carriage, eighteen mourning coaches, and a great many private carriages. On arriving at North st. Andrew street, the Free Church Presbytery of Edinburgh, and the Commission of the Free Church, joined the procession,† the members walking four deep, with Dr. Chalmers as Moderator of the Presbytery, and Mr. Grey as Moderator of the Commission, in the rear. On reaching No. 119 George street, (the temporary Hall of the College of Physicians,) the Royal College of Physicians, and the Royal College of Surgeons, amounting to about 150 gentlemen, met the funeral, and preceded it, four deep, the surgeons in front, having their president, Dr. James Simson, walking behind the members, and the physicians in like manner having their president, Dr. Robert Renton, walking in the rear. On reaching the gate of the West Churchyard, those public bodies opened up right and left, and stood uncovered, allowing the body, mourners, and friends, to pass between their ranks, after which they followed the procession to the grave in reversed order, having their respective office-bearers in front. In addition to those immediately attending the funeral, there were great crowds of the community, waiting the arrival of the procession throughout the streets, evincing the esteem in which the deceased was held by all classes. The ceremonial was unostentatious, and profoundly solemn.

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* According to the observations of Professor John Reid (Monthly Journal for 1843, p. 319,) the average weight of the encephalon of a man between fifty and sixty years is 50 ounces and 2 drachms. The two heaviest brains which we recollect are those of Cuvier and Dupuytren ; the former of which was 63, and the latter 64 ounces.

† Dr. Abercrombie held the office of elder in Mr. Bruce's congregation, in connexion with the Free Church of Scotland.

Dr. Abercrombie's mind was eminently *practical*, a trait which shone forth conspicuously in all his writings, alike on medicine, morals, and religion. He scrutinised facts with singular jealousy; and we have heard it well remarked by a physician, that "what Abercrombie recognized as facts *must be facts*."

Dr. Abercrombie possessed every qualification required by the consulting physician—punctuality, an honorable and considerate bearing to his brethren, and a singular quickness of apprehending the nature of the case on which he was called to give an opinion. At the bed-side he was quite at home; there it was, that the depth of his penetrating glance, and the sagacity of his mind, were best seen and known. Those who were not acquainted with his manner, were often startled, on their first consultations with him, at the rapidity and accuracy of his diagnosis and prognosis. Although, doubtless, he completed a process of induction in his own mind, yet he was in the habit, unless particularly asked to do otherwise, to communicate only the result of his reasoning, and that in words as few and plain, as the English language could supply.

For the present, we will say no more of the great man who has left us; but upon some future occasion, when the present lamentations shall have subsided, it may be well—should no suitable pen in the interval take up the theme—for us to call the attention of our readers to a special consideration of his writings, the principal incidents of his life, and chief points of his character, especially as connected with the history and present state of medical science. J. R. C.

(*From Dr. Cormac's Journal*, Dec. 1844.)

## SIR HENRY HALFORD. BART. G.C.H.

SIR HENRY HALFORD was the son of Dr. James Vaughan of Leicester, and was born on the 2d of October, 1766. He received his preliminary education at Rugby, and graduated at Christ Church College, Oxford, in the year 1794. He established himself as physician in London, and quickly rose to great eminence in his profession. Distinguished no less by the elegance of his manners than by the extent of his classical acquirements, his practice rapidly increased, and he soon became the favorite physician of the Court, and of the elevated circles of rank and fashion. In 1809, he came into possession of an ample fortune on the death of Sir Charles Halford, a cousin of his mother, who was the daughter of Lord St. John; and in consequence of this acquisition, he changed his name from Vaughan to Halford, a baronetcy being at the same time conferred upon him by George the Third, who had previously appointed him his physician. He continued to hold a similar appointment under George the Fourth, William the Fourth, and her present Majesty; and thus enjoyed the remarkable distinction of having possessed the confidence of four successive sovereigns, and of having attended professionally almost every member of the Royal Family.

To the honours thus emanating from royal favour, were added the highest which the members of his own profession could confer. Sir Henry Halford was elected President of the College of Physicians in the year 1820; and held this office till his death, which happened in the month of March of the present year (1844). His constitution was naturally robust, and its vigour was sustained unimpaired to an advanced period of life; but in later years, the advance of age had become perceptible; his activity declined, and his constitution at last sunk, in the 78th year of his age, under the exhaustion consequent on a neuralgic affection.

He was elected Fellow of the Royal Society in 1810; he contributed no paper to our Transactions, but has enriched those of the College of Physicians with numerous valuable essays on professional subjects. His orations pronounced before the College are remarkable for the classical purity and elegance of their Latinity. (Proceedings of the Royal Society, 1844-5).

# BOOKS RECEIVED FOR REVIEW.

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2. Observations on the Treatment of some forms of Incipient Phthisis. By Joseph Bell, Surgeon, Glasgow.—Glasgow, 1844. 8vo, pp. 22.

3. Mémoires pour servir a l'étude des maladies des Ovaires. Premier Mémoire. Par Achille Chereau, M.D.—Paris, 1844. 8vo, pp. 189.

4. First Report of the Commissioners for inquiring into the state of Large Towns. Two vols. 8vo.—London, 1844.

5. Rapport sur l'Organisation de la Médecine en Allemagne. Par M. le Dr. Roger. Juin, 1842. —Paris.

6. Supplementary Report on the practice of Interment in Large Towns. By E. Chadwick.—London, 1843. 8vo.

7. The Educational provisions of the Birmingham School of Medicine. By the Rev. V. Thomas, B.D.—Oxford, 1843. 8vo. 1s.

8. Researches into the Physical History of Mankind. By J. C. Prichard, M.D. F.R.S., &c. Third Ed. Vol. IV.—Lond. 1844. 8vo, pp. 631. 18s.

9. Lœrebog i Fædselsvidenskaben for Jordenærdre. Ved Dr. F. C. Faye.—Skien, 1844. 8vo, pp. 241.

10. Handbuch der Anatomischen Chirurgie. Von W. Rozer.—Tübingen, 1844. 8vo, pp. 588.

11. Traité Pratique d'Auscultation. Par MM. Barth et Royer. Séconde Edition.—Paris, 1844. 8vo, pp. 686.

12. Vestiges of the Natural History of Creation. —London, 1844. 8vo, pp. 390. 7s. 6d.

13. Contributions to Ophthalmic Surgery. Part II. By W. R. Wilde, M.R.I.A.—Dublin, 1844. 8vo, pp. 38.

14. Contributions to Aural Surgery. By W. R. Wilde, M.R.I.A.—Dublin, 1844. 8vo, pp. 35.

15. Lehrbuch der Speciellen Nozologie und Therapie. Von C. H. Fuchs, Professor zu Göttingen. Erste Lieferung.—Göttingen, 1844. 8vo, pp. 160.

16. The Principles of Surgery. By James Miller, F.R.S.E. Professor of Surgery in the University of Edinburgh.—Edinburgh, 1841. 8vo, pp. 716. 9s.

17. Memoir on the Sex of the Child as a cause of difficulty and danger in Human Parturition. By James Y. Simpson, M.D. F.R.S., &c.—Edin. 1844. 8vo, pp. 55. (From the Ed. Journ.)

18. Percussion und Auscultation des Herzens im gesunden und kranken Zustande, &c. Von L. Günzburg.—Wien, 1844. 8vo, pp. 179.

19. A Manual of Elementary Chemistry, Theoretical and Practical. By George Fownes, with numerous wood engravings.—London, 1844. 8vo, pp. 566. 12s. 6d.

20. A Practical Treatise on Midwifery; exhibiting the present advanced state of the science. By F. J. Moreau. Translated from the French. by T. F. Betton, M.D. and P. B. Goddard, M.D. With 80 Plates.—Philadelphia, 1844. 4to, pp. 235. 10 dollars.

21. Principles of Forensic Medicine. By W. A. Guy, M.B. &c. Part III. 2s. 6d.

22. Remarks on the Report of the Commissioners on the Poor Laws of Scotland. By W. P. Alison, M.D. &c.—Edinb. 1844. 8vo, pp. 302.

23. Facts and Observations in Medicine and Surgery. By John Grantham, Surgeon.—Lond. (no date) 1844? 8vo, pp. 216. 7s. 6d.

24. Principles of Human Physiology. By W. B. Carpenter, M.D. F.R.S., &c. Second Edition.—London, 1844. 8vo, pp. 745. 20s.

25. Outlines of Military Surgery. By Sir G. Ballinghall, M.D., &c. Third Edition.—Edinb 1844. 8vo, pp. 568. 14s.

26. A Dictionary of Terms used in Medicine and the Collateral Sciences. By R. D. Hoblyn, A.M. Second Edition, revised and enlarged.—London, 1844. 8vo, pp. 394. 10s.

27. Remarks upon the Mortality of Exeter; together with suggestions towards the improvement of the Public Health. By F. Shapter, M.D. —London, 1844. 8vo, pp. 32. 1s.

28. On Military Hygiene, and particularly upon the Clothing of Soldiers. By Frederic Roberts, esq. Assistant-Surgeon 59th Regiment.—Portsmouth, 1844. 8vo, pp. 24.

29. The Medical Remembrancer, or Book of Emergencies. Second Edition.—London, 1845. 18mo, pp. 108. 2s. 6d.

30. Practical Observations and Suggestions in Medicine. By Marshall Hall, M.D. F.R.S.—Lond. 1845. 8vo, pp. 360. 8s. 6d.

31. Text Book of Anatomy for Students. By A. T. Lizars, M.D. Part III.—Edinburgh, 1844.

32. A Lecture on the Ethnology of the Ancient Irish. By W. R. Wilde.—Dublin, 1844. 8vo, pp. 16.

33. A Report on the Obstetric practice of University College Hospital, London. By E. W. Murphy, M.D., Professor of Midwifery, &c.—Dublin, 1844. 8vo, pp. 53.

34. An Address to the Harveian Society on the advantages of Medical Association. By E. W. Murphy, M.D., &c.—London, 1844. 8vo, pp. 15.

35. Londres et les Angles des Temps Modernes. Par le Docteur Bureaud Rioffrey.—London, 1844. 8vo, pp. 430.

36. A Practical Treatise on the Diseases peculiar to Women. By J. Ashwell, M.D.—London, 1844. 8vo, pp. 737. 4s.

37. Pathologia Indica. or the Anatomy of Indian Diseases. Part I. By Allen Webb, B.M.S. Lecturer on Surgery in the Calcutta College of Medicine.—Calcutta, 1844. 8vo, pp. 204. 1s.

38. Ricerche ed esperimenti intorno alla formazione della cotenna nel sangue, &c. Del Dottor G. Polli.—Milano, 1843. 8vo, pp. 167.

39. Lectures on Pulmonary Phthisis. By J. T. Evans, M.D.—Dublin, 1' 4. 8vo, pp. 196.

40. Urinary Deposits, their Diagnosis, Pathology, and Therapeutical Indications. By Golding Bird, A.M. M.D., &c.—Lond. 1844. 8vo, pp. 323. 8s.

41. An Apology for the Nerves; or their Influence and Importance in Health and Disease. By Sir George Lefevre, M.D., &c.—London, 1844. 8vo, pp. 363. 9s.

42. Causes Générales des Maladies Chroniques, Specielment de la Phthisie Pulmonaire, &c. Par A. Fonscault, &c.—Paris, 1844. 8vo, pp. 480.

THE

BRITISH AND FOREIGN

MEDICAL REVIEW,

FOR APRIL, 1845.

## PART FIRST.

## Analytical and Critical Reviews.

### Art. I.

*Report of the Metropolitan Commissioners in Lunacy to the Lord Chancellor. Presented to both Houses of Parliament by command of Her Majesty.—London*, 1844.

The historian, looking back at certain marked men, pronounces them to have been "before their age." They have seen clearly certain great truths, and have ardently, perhaps, promulgated them, but the world heeded them not; it took no great notice of the men, and less of their doctrines. But the time comes when their very truths become of deep interest to multitudes. The truth which seemed to be the property of one man becomes almost suddenly the inheritance of all. It would seem almost as if some spiritual power influenced at once multitudes of thinking and active souls, compelling them to believe unanimously, and giving them the willingness to act; like the invisible and universal influence of the spring season, which in a few weeks brings into action that life which has been hid in small unnoticeable seeds, or in dry naked twigs, branches, stems, and trunks; or in eggs or ovaries, or torpid in sleep; and in a few weeks clothes the fields and woods with a living garment, peoples them with living creatures, at once converting the lifeless and dead surface of the earth into a field for all forms of beautiful and vigorous life. It would be well if truth alone had this universal power over men's minds. Error may have the same mysterious influence. Whole nations may act simultaneously with such ruinous folly, that, as Bishop Butler said, when deeply pondering some sad facts of history, we can only account for them on the supposition that multitudes of human beings become at times simultaneously mad. These changes in public opinion are very curious phenomena. We are now in the midst of such a change; not one in which any insanity can be suspected, as it is a change based on the firm foundations of physical science, in accordance with the purest truths of moral philosophy, and of its highest form, Christianity, and leading to the most beneficial issues. May it be carried out with the energy and the earnestness with which nations have so often and with such self-sacrifice executed their errors. The "condition of England" question has now got hold of men's minds. The mere political condition, which within a short time so fiercely agitated them, has given way to the consideration of the social condition of the country. The ground of anxiety is not now whether the power of voting shall be given, or shall be withheld, from the poor man, in order that this or the other party in the state may be supported or weakened; but whether or not his actual bodily and mental condition shall be improved. Whether it is not the duty of the rich man to see that the tenement of his poorer brother is less crowded, better ventilated and drained, white-washed, wind and water tight. Whether it is not the duty of the whole community of the state to regulate the building of cottages, the draining of streets, the supplies of water, in order to prevent the wholesale causes of disease, which sweep away or weaken so large a number of our labouring classes; and whether improvement in the physical condition of the abject poor must not go hand in hand with attempts to raise them from their spiritual degradation. That the public are becoming interested in such subjects, the importance of which we have *known*, and not merely heard of, is most gratifying; for, as medical practitioners, we have watched men in their prime die of fever, poisoned by malaria generated in their close and filthy tenements filled with the destitute, or rising out of stagnant ditches or badly-made sewers; and we have made our way through the filth allowed to accumulate in the poor man's street, and have ourselves been half suffocated by the stench of his tenement; and we have seen the curved spine, and handled the scrofulous joint, and listened to the cavernous gurgle in a human being's lung, and practice has proved what physiology affirmed, that destitution and debilitating influences weaken the mind, rendering the individual an easier prey to vicious habits, and less capable of virtuous self-control. To our profession it is therefore of especial interest that matters have taken this turn; that newspapers, journals, and all ephemeral literature teem with discussions on the sanitory condition of the poor; that baths and washhouses are erecting for the labouring classes on a large scale; that Parliament is investigating the state of the large towns and cities, with the especial object of devising some means for the mitigation or prevention of those several causes of disease which are the result of a condition of things which is remediable by a paternal government.

One of the proofs of this change in the direction of the aims of government is the Report before us. It is an inquiry into the state of the lunatics confined in asylums in England and Wales, by a body of Commissioners, consisting of members of Parliament, men of business, barristers, and physicians, who were empowered by act of Parliament to visit all the lunatic asylums in the kingdom, and to investigate minutely the construction of the buildings, and to point out their advantages and defects; to examine their management, resources, superintendence, and domestic economy; to inspect the bedding, clothing, and food of the patients, and to inquire into the coercion which is used, the means of punishment, the occupations and amusements provided, and, in fact, every circumstance connected with their subsistence and general management; the mode in which the present laws and regulations concerning lunatics worked, and to suggest ameliorations. This Report is the fruit of their labours. Lord Ashley is their chairman, and the medical members are Drs. Turner, Bright, Southey, Hume, Waterfield, Bisset Hawkins, and Prichard, all of whom (except Dr. Bright) have signed the Report, which, from the weight of names of men in high estimation, becomes an important document. But though important, we fear it will be read by few. To readers in general there is no book more repulsive, within and without, than a Report. The narrow strip of letter press, the marginal references, the long quotations of evidence, strung together with common-place reflections, the object of which seems to be to make out a case, to show that the secretary has done something, or that certain commissions have not been altogether vain, or that large sums which John Bull has subscribed have really not been merely for the support of the officials (although much of it is thrown away in thus attempting to prove the contrary): the first look of the book, in its unmistakeable blue or olive paper covers, is at once with many sufficient to pronounce it "a sham," and to condemn it unread to all the base uses of waste paper. Now and then physiognomy deceives. *Nulla fronti fides.* A few grains of wheat are hidden in the bushel of chaff. Among the thousands of Annual Reports printed in this age of societies and commissions, it would be strange if there were not some which were profitable to others beside the printers, some exceptions to prove the rule; and as we think the Report before us is of this last sort, we purpose laying all that contains matter of importance before our readers in the present article.

It was probably owing to the Government not wishing to interfere with the Poor Law Commissioners, that this inquiry was not more complete. It will be seen hereafter that so many abuses exist in the lunatic wards of workhouses, that the investigation should also have extended to them, and that the Poor Law Commissioners themselves appear to be in ignorance as to the true state of these pauper lunatics (9336,) which are under their care.

### I. KIND OF ASYLUMS.

*County asylums for paupers.* These are erected and paid for by county rates. The great expense of their construction has prevented the erection of others. Some have cost as much as 200*l.* per head for those they will accommodate, whereas the average expense of a union workhouse is 40*l.* a head. Half of this large expense seems to have been caused by making the buildings fire-proof, and from the number of separate cells. The Commissioners object to any architectural decorations; they doubt the necessity of fire-proof buildings, as neither hospitals nor private asylums are fire-proof; and they question the desirableness of separate sleeping cells, as they find the rule is in private asylums for four or five to sleep in separate beds in the same room. We do not agree with the Commissioners, but with Dr. Conolly, in this latter particular. (See Dr. Conolly's Report on the Asylums of Paris, in our last number.) These asylums should be placed on high ground, on a dry soil, with cheerful prospects, where there is a plentiful supply of water, and proper drainage, surrounded by sufficient land to give outdoor employment and exercise, and not overlooked. The interior should be light and cheerful, and there should be light and warm galleries for exercise in bad weather. Some have these advantages, but in many they are partially or wholly neglected. The want of an ample supply of water in places where numbers are collected (many of whom are extremely dirty in their habits) is obviously a serious calamity, and the want of sufficient land is a great defect, as out-door employment (especially for the poor,) is a great means of restoring the health of the mind, and of promoting tranquillity. Warmth, dryness, and ventilation are most important. At Stafford, since the adoption of an improved mode of ventilation and warmth, dysentery which was before prevalent, has not occurred, and the same disease has been removed in the Dorset Asylum since the floors which were damp have been taken up and relaid.

In many of the older asylums the circulating steam or hot water apparatus has been introduced instead of open fires and stoves. In the Chester Asylum open fires in the day-rooms are still used "with a view to the enjoyment of the inmates, who much preferred them to a heating apparatus as being more cheerful." In the Kent Asylum, arrangements for ventilation (as should always be the case,) were executed with the building. The fresh air passes into a chamber beneath, where it is heated by passing over hot water pipes, thence it enters the galleries in a large volume near the ceiling, and it is drawn off through holes in the floor into air drains communicating with fires in the cellar, which fires are entirely supplied by the vitiated air from the galleries and dormitories. This is said to answer perfectly. It is obvious, however, that a decided error has been committed in allowing the air to enter at the top and drawing it off from the bottom of the rooms, as the air vitiated by respiration is thus necessarily breathed over again, which it ought never to be.

From the facts given, as well as from our own experience, we conclude that in day-rooms open fires properly guarded are preferable from their cheerfulness; for where low spirits and gloom and melancholy are the diseases of so many of the patients, every means should be taken to promote an opposite condition, and the mere question of expense should not decide the point. But refractory wards, galleries, and dormitories should be warmed by hot air, or by some system which combines warmth with proper ventilation, and in all new asylums this should be a part of the plan of the building, and not an after thought. Ventilation of the cells for the dirty patients, the Commissioners found often much neglected, and in some asylums the galleries which were not warmed artificially were extremely cold and comfortless.

Sleeping-rooms should be built on one side only of a gallery, as they make it gloomy when on both sides; or if this latter arrangement is unavoidable, as in old buildings, recesses should be left between the rooms at intervals, lighted with windows in the outer wall. Light, if possible, should be admitted at the ends of galleries. The Commissioners are of opinion that good-sized sleeping-rooms, with a few beds, are preferable to single cells, as having a more free circulation of air, a more even temperature, and greater cheerfulness. We, however, consider a certain proportion of cells most desirable. Rooms on basement floors as a rule should not be used for lunatics, as they are cold, dark, and ill-ventilated. In some older asylums their cheerfulness has been improved by making them to open on green grass slopes instead of areas.

The Commissioners incline to the opinion that galleries should be used for exercise only, and not as day-rooms, as the preparation of meals, placing and removing benches and tables interfere with the chief object. There is, however, another point at which this may be viewed. These preparations and changes make a break in the day which cannot be otherwise than agreeable to these poor idlers in wet weather. And we suppose it must be for some such practical reason as this that the galleries in the Kent Asylum, one of the best, are used as day-rooms, and that the resident physician of Hanwell approves of their double purpose.

The yards should have as much light, sun, and prospect as possible. Many in the older asylums are gloomy, from high walls, and neighbouring buildings. Every yard should have a shed for shelter from the sun.

The Commissioners think that no asylum can contain more than 200 patients with benefit to themselves and to the public, from the difficulty of maintaining order and discipline in these establishments where so many servants are required. There must be of course a limit beyond which it is imprudent to pass, but the grounds for limiting the patients to 200 are not given. We agree with Dr. Conolly in thinking that 400 should certainly be the extreme limit. Eight out of the sixteen county asylums contain more than 200 patients, and in five of these the system of non-restraint has been successfully carried into effect.

By law the magistrates at the quarter sessions have the power of electing from their number a committee of visiting justices to superintend the internal management of county lunatic asylums, and to elect and dismiss officers and servants. This latter power seems often delegated to the medical superintendent and the matron; the Commissioners regard this as an abuse. But those who are conversant with committees of charities know that usually they are the outward and visible sign of the will of some single individual, who devotes himself to the business of the Institution, understands it, and really regulates it. And if there is no such person on the committee, no persons are better qualified than an able medical superintendent and a matron, for estimating the value and merits of the servants employed. A visiting magistrate, capable and willing, who devotes his time to an asylum, would get all the influence the law gives him; but such men are scarce, and cannot be created out of any body of magistrates.

A judicious suggestion is made that a general body of rules for the management of *all* county asylums should be drawn up, with uniform and concise tables for statistical returns. In doing this it would be advisable that all the printed rules of the different asylums should be collated by some physician practically conversant with the subject, and the rules chosen should be submitted to a barrister for revision, as no non-legal person is competent to judge of the precise bearing of any such form of words.

Rules, the Commissioners suggest, should be laid down for the management of those paupers who have no home or parish on leaving the asylum. There were in 1842, in the County Asylum of Lancaster, 118 of this class, and in 1843, there were 126 at Hanwell. Funds for this object have been left to several hospitals by charitable persons, an object well worthy the attention of the humane. The Adelaide Fund at Hanwell for this purpose is a most valuable institution. The Middlesex magistrates do not now adjudge a patient to Hanwell without a minute investigation of his claims by the county solicitor, and thus they benefit the pauper by discovering his settlement, and at the same time serve their own county. Every county asylum containing 100 beds or more is required to have a resident medical officer; and the Commissioners recommend in addition a visiting physician.

They further suggest that although a few of the county asylums are well adapted for this purpose, and a very large proportion are extremely well conducted; yet that as some are unfit for the insane, some placed in ineligible sites, some deficient in means of out-door employment, some defective in internal accommodations, some are cheerless and some too large, and in addition all expensive in their original construction,—that it is deserving consideration whether the power of erecting public asylums should not be regulated by some authority independent of the magistrates with whom it now rests. The great practical evil seems to be the expense of building new county lunatic asylums, which hinders their general adoption, and certainly few methods can be more likely to entail expense than the committing such a matter to a committee of magistrates, none of whom may be sufficiently acquainted with this kind of business to check in any measure the rapacity of architects, surveyors, or contractors, at whose mercy even a good man of business must be to a certain extent. The submission of plans and estimates to some competent tribunal, wholly independent of local interests, would be most desirable; but this is not a medical question, although as medical men we are much interested in it.

2. *Mixed county asylums.* A few asylums were built under an act, the intention of which was to support the paupers partly out of the payments of the rich by admitting private patients also. But the object has failed, the paupers in such establishment are less advantageously situated, and their maintenance is as expensive as in asylums established solely for their use.

3. *Military and naval hospitals.* The military hospital at Fort Clarence requires great improvements. That part of the naval hospital at Haslar set apart for lunatics is admirably adapted for its purpose. The rooms are spacious, lofty, and airy, with a fine view; there are excellent exercising grounds betwen the hospital and the shore, and the patients are frequently taken out in boats.*

4. *Public hospitals supported wholly or partly by voluntary contributions.* In the lunatic ward of Guy's Hospital, and to a certain extent in the Bethel Hospital at Norwich, the patients pay nothing; but in the others (seven are mentioned,) the patients pay the whole or the greater part of the expense of their own maintenance and medical attendance. "Private patients, who have been in better circumstance, derive much benefit from the comforts and advantages which these institutions supply at a moderate rate of payment." Among them the Commissioners mention with almost unqualified approbation, and they are by no means great praisers, the Retreat near York, and the Asylum at Lincoln, the Warneford Asylum near Oxford, and that at Northampton. The situa-

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* See our account of this asylum, vol. XVII, p. 285.

tions of St. Luke's, the Bethel Hospital at Norwich, and the Asylum at Manchester are bad.

5. *Licensed Asylums.* These are of three kinds: *a.* For private patients only. *b.* For private patients and paupers. *c.* Licensed parts of workhouses for paupers.

*a. Asylums for private patients only.* The Commissioners found many of these susceptible of improvement; but on the whole this class of houses were well conducted and calculated for the comfort and well-being of the inmates, and owing to suggestions from the Commissioners were gradually improving, though from their experience they were convinced that some of the houses which they now commend would become scenes of great abuses were it not for constant supervision.

The chief abuse is in the illegal practice adopted by some proprietors of taking patients without certificates on the ground that they are merely "nervous," some of whom are actually insane. "Every individual confined under certificates is examined by official visitors, whose duty it is to satisfy themselves not only that he is properly treated, but he is also a fit person to be detained; and such investigation is some protection against persons of unsound mind being induced to make dispositions of their property." The neglect of this practice is obviously objectionable.

*b. Licensed asylums admitting private patients and paupers.* In some asylums which have been private mansions the family of the proprietor and a few private patients occupy the mansion, and the paupers are consigned to the offices and outhouses: such are the houses at Lainston and Nursling in Hants; Bailbrooke, near Bath; Plympton, Devon; Derby; and Duddeston, near Birmingham.

Owing to the visitation of the Metropolitan Commissioners the houses at Bethnal-green, which were among the worst, now rank with the best asylums. At Dunston Lodge and Chester Asylum, notwithstanding official remonstrances, one bed is allotted to two men.

*c. Licensed parts of workhouses.* Those at Morda, near Oswestry, Salop, and at Stoke Dameril, near Plymouth, are extremely ill-suited for the purpose. At Kingsland, near Shrewsbury, the licensed part of the House of Industry contained from 80 to 90 lunatics, nearly all of whom were chained by their wrists to their beds at night! and this barbarous practice is only partially discontinued in consequence of remonstrance.

## II. ABUSES AND DEFECTS.

Under this head are classed those asylums which deserve "*almost unqualified censure.*" (p. 46.) They are eleven in number, viz. Haverfordwest; St. Peter's Hospital, Bristol; West Auckland; Wreckenton near Gateshead; Derby; Lainston and Nursling, Hampshire; Kingsdown House, at Box, near Bath; Plympton, Devon; Nunkeeling, near Beverley; and West Malling, in Kent.

The asylum at Haverfordwest is a disgrace to the age and country. It is an old jail, unaltered for its present purpose, out of repair and destitute of every comfort and convenience. On their first visit in 1842 the Commissioners found eighteen patients in two rooms, the only article of furniture in both day-rooms being a single table, the rooms paved, dark, and cheerless. The dress of the lunatics ragged, dirty, and insufficient, and not a single change either of body or bed linen in the asylum. Their beds of dirty straw, the only covering a dirty rug, or a scrap of blanket. In a cell, lighted by a grating, where the stench was so offensive that it was scarcely possible to remain, was a woman, fastened to a chair and entirely naked! No place for excercise, no attempt at employment or amusement, prayers never read, never visited by a clergyman, and scanty and unwholesome food. After strong remonstrances to the magistrates there was some improvement, but the place is still wholly unfit for the cure or treatment of the insane.

St. Peter's Hospital, Bristol, is entirely unfit for its purpose, as well as that of West Auckland, where, in a small, cheerless, unglazed room, were five men confined with chains.

At the Wreckenton Asylum, near Gateshead, in 1842, it was the practice to chain patients by their leg on their first admission "to see what they could do." The patients, and their rooms, and bedding were filthy, and chains were much used. Remonstrance had some effect, but the house is unfit for its purpose.

At Derby the beds were filthy: the paupers occupied what had been the coach-house and stables, the rooms low, comfortless, and unventilated. "An epileptic was in a bed in a dying state, and the windows and door of his room being closed, and there being no opening or other means of producing a free circulation of air, the apartment was most offensive. Some saw-dust had been thrown upon the floor to absorb the urine, but nothing had been done to purify the air." (p. 57.)

At Lainston, in Hampshire, the paupers were dirty and ill-clothed, and whilst the proprietor's family and female patients occupied the mansion, the stabling and outhouses had been converted into the residences for paupers. There were seven women with iron hand-locks and chains by day, who were also chained to their beds at night. The remonstrances of the commissioners have been attended to. At Nursling, Hants, the paupers, as at Lainston, were placed in the outhouses, which were dilapidated, and so ill-constructed that they could not be made comfortable. The bed-rooms for the dirty were offensive, confined, and had unglazed windows with only shutters.

At Kingsdown House, at Box, near Bath, the violent and the dirty were crowded together with the quiet and convalescent; and the noise and confusion were extreme. Many women were coarsely ironed, and one was chained by the leg to a seat in a paved passage to prevent her hurting herself in her fits! Eight or ten women were chained or strapped in their beds at night. The commissioners have made three annual visits, and notwithstanding their suggestions, it remains in the same unsatisfactory state.

But the asylum at Plympton, Devonshire, bears away the prize for filth and inhumanity. There were seventeen patients in a room seventeen feet by twelve, with no table, and seats for ten only. In a day-room was a young woman in a state of furious mania, six weeks after delivery, in a strait-waistcoat, chained by the arm and leg to a bench! Another woman in a strait-waistcoat was lying in a hole in the middle of the yard with her head exposed to the broiling sun. The dirty male patients slept in a damp, close room, which had been a dairy, with one small unglazed window closed by a wooden shutter. Twenty-one were chained to their beds at night. The night-cells damp, and dark as cellars; windows unglazed, floors soaked and reeking with urine, and partly covered with straw and excrement; filthy straw for beds, and in some (containing women,) there were no windows, but the light was conducted by a grating over the door opening into a passage, and so little of it that the commissioners in the day-time were obliged to use a lantern to get this sickening and shocking sight. And for each of these paupers 10*s.* 6*d.* was paid weekly, and one guinea on admission to this foul and loathsome den. The remonstrances of the commissioners have been useless, but through Lord Ashley, the matter has been taken up by the Earl of Devon. The asylums at Nunkeeling, near Beverley; and West Malling, Kent, were found in a disgraceful state. The latter has been since closed.

But we must condemn the system generally, quite as much as the conduct of individuals acting under it: that system by which pauper lunatics are made a source of profit to private individuals who embark in the lucrative employment of proprietors of lunatic asylums The house of a country gentleman is rented or purchased. The mansion is used for the proprietor's family, and his rich patients; whilst the offices, stables, and coach-houses are fitted up as rooms for pauper lunatics, on whom much of the profit of the whole establishment depends, as they consume the remains of the rich men's tables. They are the receptacles of superfluous provision which would otherwise be wasted. And as it is necessary to keep up a large establishment for private patients, whose numbers necessarily fluctuate, the certain income from a body of paupers is an additional advantage to the pocket of the proprietor. On this system they may be well fed, but they are necessarily ill-lodged; for it is impossible to convert offices and outbuildings into apartments fit for the insane, unless at an expense which would destroy the proprietor's profits. Thus classification, except in a wholesale imperfect way, is out of the question: there are no fit accommodations for the dirty class, as it is an expensive process to keep them clean: and as no adequate provision can be made for amusement and occupation the patients are dull, listless and idle; and, from want of occupation, restraint and coercion become almost inevitable. It is a common argument, that the accommodation provided in these outhouses is better than the pauper has been used to at home. This may be the case, but a cottage with its scanty conveniences may be fit for a sane man, but entirely unfit for an insane one: for whose care, perhaps, and most certainly for whose comfort, certain accommodations are essential, and for which the parish pays a much larger sum than they would allot as out-door relief to a pauper labouring under ordinary sickness; or for a lunatic who is so harmless as to remain with his friends: the average expense to unions of pauper lunatics and idiots who are provided for with their friends being 2*s.* 7¼*d.* a week, whilst the average weekly payment to licensed houses is 8*s.* 11½*d.* The remedy fortunately is known:—*County asylums for all pauper lunatics;* a remedy which we are happy in believing will, ere long, be universally applied.

The humane system of non-restraint, or even the system which allows occasional restraint, can only be carried out where arrangements can be made for classification, and for employment, and cheerful amusement; and these ends can alone be attained (unless for rich men) in large asylums expressly constructed for the purpose. The expense of building asylums is large, but, after all, no great immediate burden for a whole county, and the annual saving is so considerable, that no greater expense is entailed than at present, whilst the comforts of the paupers are greatly increased. Thus the average expense for paupers in the county asylums is 7*s.* 6¾*d.* weekly, and in licensed houses 8*s.* 11½*d.*; a saving of nearly eighteen pence a week, which, in an asylum containing 300 patients, would amount to 1170*l.* a year. The rigid economy which is now enforced under the New Poor Law Act is an additional argument.

That eleven asylums in which such flagrant abuses exist are still to be found, and that in almost all these instances the commissioners' remonstrances, and the ordinary legal powers they could exercise, were unavailing to repress the abuses, are strong and unanswerable arguments in favour both of a more constant and strict supervision by competent persons, with increased powers given by law. The commissioners admit that the visiting justices, as a body, do their duty, but yet that they have met with three instances, in two of which the asylum had not been visited for one year, and in the other for two years and a half. There are some points in which the justices have never directed their attention, and are not competent referees; such, for instance, as the fitness of the lunatic for liberation, the nature and effects of the employment provided, with a view to diverting the disease; the character of the medical reports indicating the care and intelligence of the medical attendant, and the quantity and quality of food. But, besides this, there is no security that the justices themselves are competent judges of the cleanliness, bodily condition, and common treatment of lunatics, or of the fitness of the accommodation which is provided for them. From the time of Justice Shallow to the present " enlightened" period, justices of the peace occasionally supply specimens of pompous and ridiculous inanity, and monstrous ignorance, which verge on the incredible; and nothing which Shakspeare or Fielding wrote is a keener satire on their body than the certificate of the justices who visited the West Auckland Asylum, as dryly detailed in this Report.

We have mentioned the West Auckland Asylum as one of the eleven which " deserve almost unqualified censure." The commissioners visited it on the 5th of December, 1842. They found 13 men and 16 women shut up in two cheerless rooms, the violent and quiet, the clean and dirty together, with one small walled court only for exercise; so that when one sex were there, the other were locked up. In the men's room, which had one unglazed window, five men, although tranquil, were confined with leg-locks, and two of these, in addition, had iron handcuffs, and fetters from the wrists to the ankles. They slept two in a bed. One woman was leg-locked by day, and chained at night to her bed. The commissioners stated that it was *entirely unfit* for the insane. It was visited afterwards, but on the same day, by two magistrates. We can fancy the sleek, well-dressed, spotless, middle-aged gentlemen filling up the time between lunch and dinner by a ride to the Asylum on a bright, frosty December afternoon. They have left their houses in that perfect state of order and comfort which belong to those of good taste, ample wealth, and the hereditary habits of English country gentlemen. The interior arrangements combining luxury, comfort, order, with the utmost cleanliness, and even in this wintry day warmth with freshness; and the eye catches through the window, green lawns and shrubberies, and beyond, ancestral trees, noble even in their winter bareness, with deer on the greenest sward. It need not be said that the cuisine is excellent, and the arrangements for the table complete; and that the stables are as comfortable for the horses, and the kennels for the dogs, as the mansion for its human residents. The magistrates arrive at the Asylum, they go through rooms where disorder reigns paramount, where sickly men are crowded in a room with one unglazed window, and that without prospect; where those who have been too excited have been tranquillized and soothed by the restraint of heavy chains, in which they are still manacled, though quite subdued, lest they should be noisy again; where those who have been used to a life of the open air, and to whom an in-door life, on compulsion, is as irksome as it would be to themselves, and more so, as their disease is most tranquillized by bodily exercise, have one small walled court, to which they have only occasional access, until they say "they have been made so tender by confinement that their health was destroyed;" and having seen all this, the justices sit down and write thus:

"5 *December*, 1842.

"We this day visited the Asylum, and found that the commissioners had just left it. We found everything in good order."

*And after finding everything in good order*; and certifying to it, the carriage drives up, the justices, as it is colder, wrap themselves in fur cloaks, draw up the windows, get home in excellent time to dress leisurely for dinner; and four courses, and some very old port receive an additional zest from their consciousness that part of the day has been spent in generously fulfilling "unpaid" duties, and the justices really sleep as sound, and rise as contented as if they had harmlessly killed partridges the day before, instead of perpetuating for another quarter the miseries of thirty fellow-creatures. Good-natured, and honest men doubtless in their way, but as incapable as visiting justices, as those worthy constables Dogberry and Verges were in their sphere. And whilst neither ability, nor knowledge of the law is required as a qualification for the magistracy, but merely a certain standing in society, such exceptions must occur, and they are strong arguments in favour of some change in the present system of visitors. Mr. Tuke's sentiments on this point are well known, and give great additional force to the arguments against the present vicious system of visitation.

### III. CONDITION OF PAUPERS ON ADMISSION.

One of the special objects of the commission was to inquire into the evils which result from delays in sending paupers into asylums, evils applicable to a certain extent to private patients also.

The medical superintendents of all the County Asylums, except two, state that paupers are sent at so late a period of the disease as to prevent or impede their recovery. And we need not say that statistical returns prove that the durability of insanity is in proportion to the early date of admission. Tables of the cases at the Retreat near York, and at the Asylums of Lincoln, Northampton, Lancaster, Middlesex, and the West Riding of Yorkshire, exhibit the large proportion of cures when the patients are admitted within three months, the less proportion after three months, and the almost hopelessness of cure where lunatics are kept in workhouses or elsewhere for a twelvemonth before admission.

At St. Luke's, where recent cases only are admitted, the cures average 65 to 70 per cent. The delay is partly owing to the ignorance of guardians and overseers as to the importance of early treatment, and to their unwillingness to incur immediate expense; but it is chiefly owing to a want of proper accommodation. Three sets of tables in the appendix prove this sad defect unanswerably.

1st. In those counties where there are either county or subscription asylums, there are 8078 pauper lunatics, for 4215 of whom, or but little more than half, there is accommodation in the asylums, whilst there is none for 3843.

2d. In those counties of England and Wales having asylums there are 14,088 lunatic paupers, but there is accommodation in those asylums for only 7457 pauper lunatics, and no such accommodation for 6156.

3dly. In 21 counties of England and Wales there are no asylums, either public or private, consequently their insane poor (amounting to 2762) must be sent to a distance at a considerable expense.

But besides this deficient accommodation, the public asylums are crowded with a large and increasing number of incurable cases. In 15 public asylums there are 4367 pauper lunatics, 658 of whom only are curable, and 3709 incurable. Thus these asylums are becoming more and more receptacles for the incurable, rather than hospitals for the cure of insanity.

The county asylum at Hanwell is an instance in which these alleged evils, which are common to all, have from the size of the county increased with a rapidity unequalled elsewhere.

It was originally built in 1831, to hold 300 patients: it was subsequently enlarged to contain 350 more, but 1000 patients are now confined in it by using offices and basement stories for these purposes, for which they were not originally designed. The cost of land and building has been £160,000, and the expenditure £28,000 a year, and yet there are 429 lunatics in Middlesex who cannot be accommodated. No measures have been enforced by the magistrates (in fact they have no power to enforce such measures,) for selecting the more recent cases when vacancies occur, and the exchange of incurable for curable cases has been refused, so that the house is filled with old and incurable cases, which the resident physician attributed "almost entirely to the neglect of proper remedies in the early stages of the disease." In March 1844, there were 984 patients, of whom 30 only were reported curable, and 40 admissions appeared during the three months preceding.

The Middlesex magistrates refuse to exchange incurable cases for curable, on the grounds that the incurables were better fed, and more comfortable at Hanwell than in workhouses. And such a reason would inevitably actuate humane men who looked at men as individual human beings, not like political economists, on mankind in the heap, although such opinions are somewhat out of date, and obnoxious to many statists, commissioners, and reporters. And after all, this exchange is but a most inefficient mode of remedying the evil in question if such it be. The remedy suggested by the Commissioners is *houses of refuge for the incurable.* These, as they would not require the same medical staff, number of attendants, minute classification, and internal arrangements of lunatic hospitals, would be at the same time less expensive, and, what is of greater importance, would be the means of giving recent lunatics a chance of cure, instead of consigning them to hopeless lunacy, miserable to themselves, and a useless burden to the state. If this, or some other plan, for the speedy reception of recent cases, is not adopted, county asylums will be eventually such houses of refuge only, as the number of incurables increases as a matter of course every year, and as the greater the number of incurables in the asylum, the fewer chances there are of recovery for the more recent cases.

At first sight, the proposal of the entire separation *in different asylums* of the incurable from the curable, will probably meet with general assent. The plan, however, is far from being unexceptionable; and we entirely concur in the modified views entertained by Dr. Conolly, as so admirably stated in the following paragraph of his Report on the Asylums of Paris, which we make no apology for reprinting from our last Number:

> "When I contemplate this, the worst class of incurables, I always think with concern of the disposition apparent in some quarters to make a formal separation, in distinct asylums, of the *curable* and *incurable.* Such propositions are abstractedly pleasing; but the effect ought to be well considered. In the case of many incurables, the manners and habits during a great part of every year are superior to those of the curable, and, therefore, not detrimental to curable companions. The separation and transmission to an asylum for incurables would be felt by them as a sentence of eternal imprisonment. As it is, hope, the only blessing left, never dies with them; and some of them recover, after years of affliction, and beyond any ordinary expectation. At once to pronounce many cases incurable which seem so would be to commit many errors; and the asylum for those pronounced curable would always be half filled with cases really not to be cured. The only class, therefore, of the incurable who could safely be severed from the rest of the patients, as mentally dead, would be these poor imbecile, helpless creatures, fallen into fatuity and dementia: and there is much reason to fear that by separating them from a curative asylum they would lose all the benefits which alleviate their unhappy lot. It is quite unnecessary to mix them in wards with more intelligent patients; but it is surely humane to keep them under sufficiently active medical direction in an asylum where it is admitted as a principle, that if few cases admit of cure, every case admits of improvement."

The removal of incurable lunatics who have been some years in a well-conducted asylum to a workhouse is a different case altogether to the selection of the most recent cases for admission, in preference to the more confirmed, and it seems that no such care is exercised, but that the admission is indiscriminate, and without reference to the urgency of the case. The great expense of incurable lunatics is shown from the tables of Hanwell. It has been found that lunatics who recover generally do so within the first year, and after two years the chance of recovery is very small. Out of 936 patients in Hanwell, 696 have been there more than two years, and were reported incurable, and the average duration of the confinement of each had been 6 years and 9 months. As each patient at Hanwell costs the parish 22*l.* 4*s.* annually, each of of these 696 patients will have cost his parish in this time 140*l.*; not including the support of the families of many of them.

The Commissioners direct attention to the printed notes of the Poor Law Commissioners in which it is stated that "the Poor Law Commissioners believe most of the persons of unsound mind detained in workhouses are incurable harmless idiots. The Commissioners of Lunacy were not empowered to visit workhouses, but in 1842 they visited such as lay in their road, and obtained the Lord Chancellor's permission to visit others. The particulars of four are given. At Redruth workhouse in Cornwall there were 41 insane paupers, of whom 6 only were idiots; several of the lunatics were violent. At the union workhouse, Bath, there were 21 lunatics, and 2 under restraint. In the Leicester union there were 30 lunatics, 12 of whom were dangerous. In the workhouse at Birmingham there were 71 insane persons suffering under all forms of the disease.

These instances show the ignorance of the Poor Law Commissioners on the state of pauper lunatics in their own unions. But besides this ignorance of facts, the reporters object to the mode in which the Poor Law Commissioners construe a doubtful clause in the Poor Law Amendment Act, so as to give their sanction to the detention of lunatics in workhouses provided they are not dangerous, without adverting to the probability of their being curable, or not; a recommendation highly objectionable, as leading to the belief that there is no harm in keeping lunatics away from asylums as long as they are not dangerous, and thus producing an incurable condition. Other objections to lunatics being confined in workhouses are that they have neither separate wards, airing-grounds, medical men skilled in the treatment of insanity, nor experienced attendants, all of which are required. Even congenital idiots are not harmless, as they often exhibit disgusting and depraved propensities.

The ignorance of the Poor Law Commissioners on the state of pauper lunatics in union workhouses, the mistakes they are of course liable to in judging of points requiring medical knowledge, and the large number of pauper lunatics (between six and seven thousand) confined in workhouses, show that it was a serious omission in the act that the Commissioners of Lunacy were not empowered to visit workhouses as well as licensed asylums; and furnish additional arguments for a system of efficient visitation of all establishments containing lunatics by competent persons under the authority of government.

### IV. FORMS OF DISEASE, MEDICAL TREATMENT, DIET, AND CLASSIFICATION.

We need only allude to a sketch of the various forms of insanity with which this part of the Report commences, and which is drawn up for non-medical readers. It is clear, simple, and practical. The *medical treatment* of the insane was an object of careful inquiry, and although the commissioners often found difficulty at getting at the truth, yet on the whole they trust they have gained a tolerably correct knowledge of the means employed. They found great diversity of treatment. In some exclusion and safe custody seem to be the sole objects, no plan of cure being attempted. For this a resident medical man, or one very near, is necessary. Many asylums having less than 100 patients are under the management of persons ignorant of medicine, and are visited by a medical man at a distance. Several of the private asylums are the property of physicians who reside in them, and many of these appear to treat their patients with judgment and skill. Amongst the most frequent causes of insanity in paupers are habitual intemperance, poverty, grief, disappointment, want of sufficient sustenance—all tending to weaken and exhaust the body, a condition often aggravated by sending them to workhouses, instead of to asylums, where they might have at once medical treatment. The general opinion of the best informed medical attendants is that the most successful method of cure of pauper lunatics is to remove this state of bodily weakness and exhaustion, by a restorative plan calculated to reproduce a vigorous state of bodily health. For this purpose are employed a nutritive and tolerably full diet, consisting of a considerable proportion of animal food, wholesome bread, milk porridge, a milk thickened with various farinaceous substances, and good broth, with a moderate quantity of malt liquor, ale or porter, and in some extreme cases wine or other stimulants. Warm clothing and bedding, and a moderately warm and dry atmosphere, are indispensable in promoting the cure and comfort, as for the most part the circulation is languid, and suffering arises from exposure to cold and damp. "Exercise in the open air in cheerful airing-grounds: baths, either warm or cold, according to the state of the circulation, and the habitual temperature of the skin; frictions promoting cleanliness and dryness of the surface of the body, and tending to keep up the action of the blood-vessels to a certain healthy standard, are generally found to promote the restoration of patients whose cases are of a curable description." These are often assisted by tonic and stimulant medicines. The whole of this plan is said to prove beneficial only when there are no signs of congestion of the brain, or tendency to epilepsy or paralysis: topical bleedings and counter-irritants are then necessary. The tonics most used are carbonate of iron, cinchona, sulphate of quina, gentian, combined with aloetics if there is costiveness, or with astringents when in cases of great debility there is diarrhea or dysentery. A moist or relaxed state of the skin, with cold extremities; a shrunk or shrivelled surface, with a livid and blotchy, or pale and yellow complexion, and feeble circulation, frequently coexist with insanity arising from depressing causes; and great advantages are said to arise from carbonate of ammonia, in frequent doses, for a considerable time. Emetics and powerful purgatives, unless indicated by any temporary disorder, are said in this form of insanity to be injurious. It is the testimony of the best informed medical superintendents that the restoration of bodily health is accompanied with marked improvement in the state of the mind. There are, as may be supposed, some medical superintendents who do not either practise or agree to this very judicious system.

The Commissioners believe that an ample supply of sufficient food is one of the most important aids towards the relief or cure of insanity among the poor. They have been assured by various intelligent superintendents of asylums that insanity has been frequently alleviated, and repeatedly cured, solely by increasing the quantity of wholesome food; and it is in consequence of their opinion that the amount of food allowed to pauper lunatics, and the rate of payment made for them in private asylums, which is sometimes too low to remunerate the proprietor for a more liberal supply, should be under the control of official visitors. External warmth is very necessary in this debilitated state. Exercise is very important, but for the most part pauper lunatics are shut up in small cheerless yards.

There is a difference of opinion as to the use of opiates. Some abjure them, others look upon them as most valuable in cases of agitation and excitement, and have recourse to them on all occasions when want of sleep and restlessness produce debility and exhaustion. "This last practice seems to be gaining ground. Preparations of opium and other sedatives given in repeated and sufficient doses are thought by the best informed practitioners, who conduct the medical treatment in the large asylums, to be of great efficacy in subduing excitement and agitation, and conjoined with the use of baths, cold applications to the head, antispasmodics, and aperients, are said to promote the cure of mania in the early and acute stages." Several instances are recorded, at the licensed houses of Bethnal Green, of patients having been restored to reason, in a very short time, by the skilful administration of opiates.

These observations on treatment apply principally to recent cases, in chronic ones medicine is of less efficacy, but much may be done by skilful medical and moral management.

*The classification* of lunatics is one of the most important ameliorations in their management which has been introduced of late years. The principle consists in distributing them according to their mental disorders, and in associating those whose intercourse is likely to be mutually beneficial, and in separating others who mutually annoy and irritate. The rules have been entirely founded on experience.

1st. The first object is the separation of dangerous lunatics from others, keeping them in one or more separate divisions, surrounded by a sufficient number of experienced attendants.

2d. Restless and noisy lunatics require separate wards and airing-grounds, removed as far as possible from those of a quieter sort. In some asylums, where there is no such arrangement, there is an appearance of restless agitation among all the patients.

3d. Dirty patients, such as fatuous persons, insensible to the calls of nature, require a separate department.

4th. The classification of melancholy patients requires great discrimination. They are often aware of the state of others, and their own condition, and contemplate with horror the prospect of being reduced to the plight of demented or violent maniacs, if associated with them; so that they should not be placed with those whose intellects are more deeply injured than their own. They occasionally derive benefit from the comparison and contrariety of their several illusions, and are cheered by associating with patients of a lively and excitable habit of mind. From their suicidal tendency they require careful watching. In the Lancaster Asylum the suicidal patients are associated with the cheerful, and with advantage.

5th. Epileptics should be kept apart. Their fits alarm the timid, and they themselves are injured by the excitement of the noisy. At Lincoln they are placed in dormitories, where an attendant, who is placed so as to have a complete view of the apartment, watches them throughout the night; a plan deserving imitation.

6th. The tranquil and convalescent are placed together.

The Gloucester Asylum is a fair specimen of the classification in county asylums. The different classes are as follows: *a*, quiet patients and those approaching convalescence; *b*, the epileptics; *c*, the fatuous; *d*, the dirty and noisy; and *e*, the working class, forming a distinct body, consisting of convalescents, and some incurable patients who are yet capable of cultivating the garden and grounds.

The classification of the Lancaster Asylum is the most complete. On each side are ten wards. 1. Cases of dementia, associated with active, orderly, and quiet cases, who have been some time in the house, and can render the demented assistance. 2. Recent cases, associated with orderly and active ones as above. 3. Patients who have not manifested a tendency to violence, to suicide, or to escape. 4, Convalescent cases, a few old cases, and one or two suicidal cases. 5. Refractory and excited cases. 6. Suicidal, with cheerful and watchful cases. 7. Refractory patients, and violent epileptics. 8. Epileptics who are not violent. 9. Aged quiet ones of long standing, and a few suicidal cases. 10. Infirmary cases.

### IV. OCCUPATION, AMUSEMENTS, AND EXERCISE.

There is no difference of opinion as to the importance of occupation in insanity; improving the bodily condition, and diverting the mind from painful or delusive trains of thought. In most instances it is desirable that the patient should be enabled to follow the occupation to which he has been accustomed ; or, if he has not been brought up to any regular pursuit, that he should be instructed in one to engage his attention. Gardening and agricultural labour should be provided, as they combine employment with out-door exercise: but, as regards pauper lunatics, their health should be the sole consideration, and not the profits of their labour; and thus moderate labour only, to strengthen and not to fatigue the body, is desirable, and such as will afford amusement without harassing the mind. A farm and extensive gardens should be attached to every large asylum. Music, dancing, and games (especially in the open air) are useful, except where the patient is too excitable : and books are important helps in promoting a serene and happy state of mind; and especially those of a cheerful kind, where the patient is melancholy. The Commissioners have found in most asylums numerous religious works, and sometimes few besides ; and they have urged the necessity of procuring entertaining books adapted to the patients' capacities. This we think very judicious advice. By amusing books (as Bishop Butler says,) " time, even in solitude, is happily got rid of, without the pain of attention ; neither is any part of it more put to the account of idleness, we can scarce forbear saying, is spent with less thought, than great part of that which is spent in reading." This, though it may be an objection to the inordinate reading of amusing books by the healthy, is an argument in their favour for the insane, who are incapable of much thought, or of much attention, but who require some amusing occupation which requires no great mental effort.

In the better conducted asylums, books are placed at the disposal of the patients ; trades and other in-door occupations are encouraged, in some cases rewarded ; and the patients regularly labour, in the proper seasons, in large gardens and farms. In the Wakefield Asylum, which has a garden of three acres, and a farm of forty acres, there were in Sept. 1842, 398 patients, 255 of whom were employed. They belonged to a manufacturing district, and occupied themselves in woollen and cotton weaving, and all the clothes and shoes of the inmates were made by them. They made fancy articles for sale, and performed all the gardening and agricultural labour. Amusements were provided, which with their occupation were highly beneficial. In the Dorset County Asylum they are encouraged to occupy themselves by an extra diet. The Kent, Dorset, and Gloucester County Asylums, and Dr. Warburton's at Bethnal Green, are mentioned as excellent in these respects. But in many there is a great deficiency, not giving the lunatic a fair chance. We have before alluded to the close and small yards, and the want of airing-grounds in many asylums ; besides these the Commissioners occasionally found the patients without occupation, books or amusement.

*Restraint.* One of the especial objects of this commission, was to inquire into the whole subject of coercion ; and the Commissioners have made minute inquires as to each individual found under restraint,—and as to the system adopted in every establishment, in this respect.

They found two courses adopted. In some asylums the disuse of restraint was the rule, but it was used in cases of necessity. The usual forms of mechanical restraint are strong dresses, strait-waistcoats, muffs, gloves, straps, leather or linen belts; and as has been mentioned, for paupers in some cases, iron leg-locks, handcuffs, and chains. In other asylums "the superintendents and proprietors state that they manage their patients without having recourse to any kind of restraint whatever;" but they employ manual force and seclusion.

> "It is said by these persons, that when any of the limbs are confined by the strait-jacket, the belt, or by straps or gloves, he is under restraint; but in cases where he is held by the hands of attendants, or when he is for any excitement or violence forced by manual strength into a small chamber or cell, and left there, it is said that restraint is not employed. In those cases where the patient is overpowered by a number of keepers holding his hands or arms during a paroxysm of violence, it is said that there is no mechanical restraint. Here restraint of some sort or other is manifest; and even in those cases where the patient is forced into a cell by manual strength, and prevented from leaving until his fit of excitement shall have passed, it is difficult to understand how this also can be reconciled with the profession of abstaining from all restraint whatever, so as to be correctly termed 'non-restraint.' It seems to us, that these measures are only particular modes of restraint, the relative advantages of which must depend altogether on the results." (p. 138.)

If this was a mere verbal criticism as to the use of the terms restraint and non-restraint, we should have no objection to it, although we should object to the sarcastic way in which it is put; but the impression conveyed by the whole is, that there is no great difference in these two modes of management, although one is called by a more popular name than the other; and on this point we wholly differ. A man instantly overpowered by the superior bodily strength of several others may at the time be irritated, but he does not feel degraded, as one who is placed in mechanical restraint: and this makes a vast difference. The Commissioners leave out of consideration the fact that a human being is dealt with, one with a sense of shame and honour, with strong likes and dislikes, passions, and feelings, often rendered more acute, susceptible, and exaggerated by mental disease. On such a question we may unanswerably appeal to a man's own feelings, and ask each reader whether it would not be to him the least evil to be overpowered by the manual force of many, and secluded, than confined by belts or handcuffs in the presence of others. The manacled lunatic may be quiet, but is he not brooding on the indignity, and in sullenness encouraging revenge? But let us take a picture of the effects on the patient's mind under mechanical restraint, drawn from the life, by one who had long lived among such scenes. "The indignation of those on whom restraints were forcibly imposed; their eloquent exposition of its degrading and maddening effects; their fierceness in running about the wards in a strait-waistcoat; the alarm and discontent their presence occasioned to other patients; their speechless joy, their sobs and tears, when unexpectedly liberated, when both in seclusion and restraint, in the midst of a paroxysm of reproaches prolonged until they were covered with perspiration, and their lips were literally covered with foam, are things of which the memory can never be effaced from the mind; and they make the ear deaf to specious representations of the comforts of straps and strait-waistcoats."*

This is not therefore a mere question of words: the difference is not merely as to the degree or quality of the force, but as to its effect on the mind of the human being; and as one of the modes produces a mental impression different from the other, the two should be considered (as they usually are) distinct and separate; and therefore, although the terms restraint and non-restraint may not be actually correct as mere terms, yet there is a distinct meaning attached to them, owing to their being used to express two very different proceedings.

But we continue the Report. The Commissioners are gratified in reporting, "that in every public and private asylum which is well managed, bodily restraint is not permitted, except in extreme cases, and under the express sanction of a competent superintendent. The unanimous opinion of all the medical officers and superintendents of these public and private asylums is, that the diminution of restraint in the treatment of lunatics has not only lessened the sufferings, but has improved the general health and condition, as well as promoted the comfort of the insane;" in which opinion they entirely concur. (p. 139.) The 11 asylums, whose names we have before given as grossly mismanaged, are not included, of course, in this commendation, as in many of them there was "an excessive and highly censurable degree of restraint," such as furnish good grounds for a refusal of their licenses.

The non-restraint system is steadily carried out at Lincoln, Hanwell, Lancaster, Gloucester, Suffolk, Northampton, and Haslar, and the superintendents think with advantage. The Commissioners found the asylums at Gloucester, Lancaster, Northampton, and Haslar very well managed, and the patients tranquil and comfortable. "*No inconveniences whatever have been experienced at Gloucester and Northampton.*" In 1842 there were four deaths by suicide at Lancaster; but the superintendents stated that had mechanical restraint been in practice, it would not have been resorted to in either case. "The present medical officers at the Lancaster Asylum have carried out the system of non-restraint to its fullest extent. By every expression of kindness, by appearing to sympathise in the patient's imaginary sufferings, and by taking a deep interest in all his concerns, they endeavour to soothe morbid irritation, and thus allow an opportunity of restoring the healthy action of the mind, and in several recent cases with success." That the system of non-restraint is carried out at Hanwell, and with what glorious results, is too well known to be more than alluded to. Here, in 1843, the Commissioners found no patient under mechanical restraint, but they saw a violent female who endeavoured to bite others and herself, thrust by main force, and with great difficulty into a cell, where she threw herself against the door and struck it violently; during this scene there was much confusion. In another cell a woman nearly suffocated herself, by tearing a woollen rag, and making it into balls, which she swallowed. One woman ran violently against another and overthrew her. Another's arm was cut, from having thrust it through the window of her cell; and several patients had cuts and bruises. In their visit to Hanwell in 1844, they "found the asylum in good order, and the patients, with one or two exceptions, tranquil and comfortable, and not one under mechanical restraint."

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* Third Report of the Resident Physician of Hanwell, 1841.

We observe that the criticism of the Commissioners is chiefly confined to the female side of the house; and we suspect that an explanation of the fact of disorder being found there, may be found in the absurd system there sanctioned by the magistrates, of giving to the matron an immediate authority over the patients on this side of the house, without waiting for the sanction of the physician.

In the Suffolk Asylum all were tranquil except the ward of refractory females, which was a scene of distressing turbulence and confusion. On a second visit in the same ward they found some of the patients half-naked, from having destroyed their clothes; one was, during the whole time, struggling with the nurse; two of the most violent had just been removed; and the fury of the rest was excessive. Here also, we should expect, though we know it not, that there must be a divided authority in the establishment: some mismanagement there must be. At Lincoln there was unusual excitement in the female ward. The Commissioners "offer no opinion" as to whether this violence was owing to the absence of mechanical restraint, but they admit there is great want of proper classification at the Lincoln and Suffolk Asylums, to which the scenes they witnessed were partly owing. In offering no opinion, but in so stating the facts as to convey an indirect opinion, we cannot admire either the Commissioners' straightforwardness or wisdom. They saw the whole circumstances, and they were in duty bound to give their conclusions, manfully and decidedly. If they thought that these facts were strong enough to justify the recommendation of moderate restraint, they should have boldly stated it, instead of insinuating it by offering no opinion.

Let us, however, examine the facts. In four asylums containing 1098 lunatics under no restraint, they were all found tranquil and comfortable at both visits. In another, containing 1000 patients, there were, on the first visit, four unruly patients; one of these was so violent as to require removal by manual force and seclusion; two *might* have been prevented by mechanical restraint from injuring themselves; and one from injuring another; but in neither case was any material injury caused. At the second visit all the thousand patients were quiet and comfortable. In two other asylums containing together 502 patients, the women in the refractory wards were violent; but in both institutions *there is a want of proper classification*, and as this is an indispensable part of the system of non-restraint, and is essential to its success, the experiment was not fairly carried out. These facts seem to us to convey the strongest affirmative evidence of the success of non-restraint. Two thousand insane patients are, with four exceptions only, found tranquil and comfortable, who are treated with mild and kind means, without the employment of muffs, strait-waistcoats, restraint chairs, or any other manacles under similar euphonistic titles. That such evidence should not be considered by the Commissioners as worthy of comment proves strikingly how the cause of humanity has advanced since Dr. Conolly had the moral courage to try the non-restraint system on a thousand patients at once.

The other county and public asylums adopt mechanical restraint occasionally; but "the system pursued is that of dispensing with it in every case, unless either the cure or the security of the patient or others is considered to render it necessary." Of course such a rule as this is open to the widest construction; no one who used even the old system of restraint in its whole extent and barbarity, would admit that he was not guided by this rule.

These asylums contain 2868 patients, 24 of whom were under restraint at the time of the Commissioners' visits, a number greater than the proportion of cases in the other asylums, which the Commissioners think *might* have been benefited by mechanical restraint; but yet most satisfactorily small; an improvement which no one can doubt is to be ascribed to the success of the non-restraint system itself, carried out in its whole integrity; an improvement which would never have been effected, had not the system of non-restraint been firmly advocated and perseveringly pursued.

The Commissioners find it more difficult to convey an accurate view of the licensed houses. Of these there are 142, and in two only (Denham Park and Fairford) mechanical restraint is entirely suppressed. "These houses are both well managed." In 60 houses in the provincial district receiving private patients only, and having 702 patients, 15 persons were in restraint. In 32 similar houses in the metropolitan district having 618 patients, 6 only were in restraint. In the establishments at Bethnal Green and Hoxton, containing about 1000 patients, chiefly paupers, about ten or twelve are in restraint at a time.

The Commissioners have entirely omitted to state the number of paupers under restraint in the private asylums in the provinces. As there are 2257 paupers so confined,—as the Commissioners were directed by the Act "to inquire in every licensed house whether any patient is under restraint, and why," this is a serious and unaccountable omission.

The number of paupers under restraint in county asylums is given; and of private patients in private houses, but the number under restraint of that large body of paupers who are consigned to private hands, is not even alluded to; and no reasons are given for this ominous silence. We regret that we have not such tables of the system of restraint in private houses where much of the old treatment of paupers still prevails, in order to compare them with the tables furnished by our non-restraint county asylums. We have no sort of doubt but that the comparison would furnish additional reasons for carrying out the non-restraint system, and supply evidence of the necessity of additional county asylums. We trust that some member of Parliament will move that this deficiency be supplied.

As restraint is going out of fashion, solitary confinement is coming into "more general use. Great numbers of the superintendents of public, and the proprietors of private asylums throughout the country, are fitting up and bringing into use, solitary cells, and padded rooms for violent and unmanageable lunatics." The Commissioners allude to the abuses to which seclusion is subjected, and judiciously recommend that the law should require a register of all cases in which solitary confinement is resorted to.

The next section is headed "Danger of total disuse of mechanical restraint, illustrated by cases." Ten cases are given. In three of these danger was apprehended and restraint used. In four others death, amputation or severe injury followed bites or kicks in asylums where restraint is employed. And in the other three, watching irritated the patients whilst "muffs" or other mechanical restraints "tranquillized." The Commissioners do not seem to have taken into their consideration the important fact that all these cases occurred in asylums where restraint is used, that its employment did not therefore prevent the occurrence of accidents from sudden violence, which happened in four cases. With regard to the three cases where watching irritated and muffs tranquillized, we doubt not that every asylum where restraint is not abolished would supply similar ones. If the watchers do not perform their irksome duty with kindness and consideration they are likely to irritate, and if such attendants who have been used to the much easier process of mechanical restraint can have recourse to it whenever they think it to be necessary, they will very naturally believe it to be necessary, and that the disease and not their own conduct renders it so. The patient is irritated by his attendants until he thinks nothing will quiet him but "muffs," and when these are applied the keeper leaves the poor wretch alone, and he falls asleep. The danger of the total disuse of mechanical restraints should not have been proved from cases occurring in asylums where restraint is employed, but in those where non-restraint is adopted. The reasoning of the Commissioners is vicious, they take for granted that mechanical restraint would have prevented certain injuries, which is the point which was to be proved.

The opinions of the medical superintendents of asylums are generally in accordance with their practice. Those of Lincoln, Northampton, Haslar, Hanwell, and Gloucester, think that mechanical restraint is not necessary or advisable in any case whatever. The superintendents at Lancaster and Suffolk asylums think that cases may occasionally occur which require it. This too is the opinion of the superintendents of the other county asylums, and public hospitals for the insane, 8 of whom think it necessary as a precaution and remedial agent, and 3 that it is less irritating than manual force and seclusion. Such seems to be the opinion of those keeping private houses, with the two exceptions of Denham Park and Fairford.

The Commissioners think it their duty to call attention to the fact that since the autumn of 1842, two of the attendants have been killed, three or four most seriously injured by dangerous patients, some of these injuries happened in asylums where restraint is practised and others where non-restraint. One of the strongest reasons for the non-restraint system is omitted. We quote from the last Report of Bethlem as from a source where no undue partiality can be suspected as occasional restraint is used at that hospital: "The experience of the last year adds another confirmation to the *now generally received opinion* that mechanical restraint is an exciting cause for suicidal propensities; *and though it may for the time* restrain the attempt, it fosters and strengthens the desire it is intended to control."

This chapter on restraint is the least satisfactory one in the Report. The Commissioners lean to the system which admits occasional restraint, but they do not firmly and openly avow this to be their opinion, although they convey this impression indirectly by their mode of stating their facts. It is this apparent want of openness which we object to, not to their opinion differing from our own, although we do not think their view is borne out by a large survey of the whole subject, or even by their own facts. For the question is one regarding the general management of lunatics as a body. Whether, on the whole, 20,000 lunatics would be in most favorable circumstances as to their recovery, bodily comfort, and mental tranquillity, if even subjected to handcuffs, muffs, or chains; or whether this point should be left to the discretion of their attendants. Of course, as in all subjects connected with the regulations of human institutions, there must be a balancing of evils. The question is, on which side the good preponderates over the imperfections to which all our plans are liable, and if in the one place the good does preponderate, and it can be carried out without wrong or injustice to others, however few those may be, we are bound to adopt it, although it may be liable to some objections.

Six years ago the experiment of non-restraint in all cases was tried at Lincoln, and a year subsequently Dr. Conolly, in the face of opposition, contempt, and scepticism, decided on making the bold experiment of abolishing mechanical restraint at once from Hanwell, where there were then 850 pauper lunatics under his care. The experiment, this Report allows, has been eminently successful. It has been followed by Lancaster, Gloucester, Northampton, and Haslar, where non-restraint and kindness have been carried to their fullest extent, and with entire success. The *direct* result has been the increased comfort and tranquillity of a large body of lunatics by the diminution of much unnecessary cruelty and harshness to which they were before subjected, and the *indirect* result is that the law of kindness instead of severity is recognized in a greater extent than formerly in all lunatic asylums (with but few exceptions) and the condition of their unhappy inmates thereby improved. It has not prevented suicides; but from the statistics of Bethlem it is fair to conclude that it has diminished their frequency. It has not prevented accidents from sudden outbreaks of fury, any more than the restraint system; but there is no reason to believe that such have been more numerous. They belong to the nature of the disease, and no one plan but the barbarous one of complete and entire confinement of all who are not idiots or demented would prevent them. The system which the Commissioners advocate does not, for these accidents have occurred chiefly in asylums conducted on their own principle, and have happened also where much more rigorous mechanical restraints have been the rule. But that the non-restraint system is of equal security with the other, both being somewhat insecure, is proved by the evidence of this Report itself. When therefore we take into consideration the notorious abuses of the system of restraint, to which it is so peculiarly liable, and the great fact that by carrying out this new system to an extreme, so much good has been effected without any increase of the inconveniences experienced under the old system; we regret that the Commissioners have not given the more decided sanction of their authority and recommendation to non-restraint, and have not even fully recognized the advantages which it has already conferred, and those to which it must lead.

### VI. RELIGIOUS SERVICES.

The services of the church are for the most part regularly performed every Sunday, and in many cases on other days of the week. The effect is tranquillizing, the patients look forward to the service with pleasure, instances of misconduct during it are very rare. The superintendents all agree as to its soothing effects, but some think that this ceases with the service; all agree that injudicious religious instruction and controversial discourses are injurious. At private asylums the proprietor or superintendent reads the services, some few have engaged the services of a clergyman. Chaplains have been appointed to all the county asylums. At Hanwell the communion is administered to those who wish it, and are considered fit to receive it. The Commissioners recommend that in all cases where it is practicable it is desirable to obtain the services of the incumbent of the parish, or a neighbouring clergyman, and that he should be required to make minutes of his visits, and the numbers attending prayers in a book kept for the purpose.

### VII. ADMISSION AND LIBERATION OF PATIENTS.

An order signed by two medical men, each having separately examined the lunatic, is required by law for the admission of a private patient into a licensed house, and signed by one medical man, one justice, or the officiating clergyman and the overseer, for the admission of a pauper. The visitors are required to examine these orders, which they should never neglect to do. Orders for admission into county asylums for private patients must be signed by one medical man, and for a pauper of the same county by two justices, or of another county by one justice. The Commissioners suggest that one form of admission for all private patients, and one for all paupers, would be desirable. The law enacts that it is a misdemeanour to receive any lunatic in any house not licensed, without sending a copy of the order to the clerk of the Metropolitan Commissioners. This is rarely attended to, and the Commissioners state that they have obtained information, from which, there can be no doubt, that pauper lunatics have been, and still are, subject to very severe and unjustifiable restraint, in cases where they are boarded out singly in the houses of persons who receive them for small sums. At the Leicester County Asylum there is a man at work in good bodily health, who had been seven years before his admission chained night and day in a small back room at Peckleton, in the same county! At Plympton is another who had been constantly chained for eleven years, whilst boarding at a private house! Such cases show the importance of carrying out the law, which supposes every pauper to be under proper supervision. There are 3896 pauper lunatics with their friends or elsewhere than in county asylums, workhouses, or licensed houses. The Commissioners have the power of liberating lunatics. They have rarely found any patient who had been in a sane state when first confined, but they have found many cases in which confinement has been too far prolonged, and not unfrequently met with reluctance on the part of the patient's friends, from timidity or wish of concealment; or of the parish officers, on the ground of expense or trouble, to remove the patient. In such cases, and also where the person signing the order is dead or abroad, (such person's consent being required,) the Commissioners have felt the importance and utility of the power vested in them; and some such authority they think should be invested in some persons to ensure the due protection of the subject. When their interference has been necessary they have in the first place, if possible, recommended that the patient should be removed by his friends, against whom he often feels animosity, from their having confined him; and under such circumstances a certain amount of liberty may be at first allowed, and the patient gradually accustomed to his liberty. The Commissioners themselves cannot grant partial liberty. The general principle which has guided them is "that wherever a man of ordinary intellect is able to conduct himself, that he is not likely to do injury in person or property, to himself or others, he is unfit to continue as the inmate of a lunatic asylum." The difficulty of applying this is great. In cases of crime, which are referred to moral insanity, they think that great scrutiny is necessary, and "that the shelter of a lunatic asylum should not be furnished, except upon incontrovertible grounds, to persons *prima facie* liable to be dealt with by the criminal law of the land."

In no case should a patient be liberated, they think, unless examined by those conversant with insanity. The power of liberation invested in the magistrates at the quarter sessions is exercised generally with discretion. They think it questionable whether any lunatic who has been guilty of violence should be released without their own sanction, or that of the visiting justices, or other competent authority.

They have found much difficulty in determining as to the liberation of patients whose insanity has arisen from drunkenness, and who have recovered, and the only reason for whose detention is their liability to resort to their former practices, and to relapse. Their practice has been, if it is a first attack, and the patient is aware of his misconduct, and desires to reform, to liberate him after a short confinement; but after a second attack to confine him for a much longer period.

### VIII. STATISTICS OF INSANITY.

The law requires the return of all lunatics confined in licensed houses and county asylums, and the tables of the Poor Law Commissioners furnish the numbers of all pauper lunatics belonging to unions; but the returns from parishes not included in unions are imperfect; there are no returns of pauper lunatics receiving out-door relief, and there are no returns to be depended on of single patients under certificate in private houses, nor for that larger class of all ranks under the care of relations and guardians, without certificate. Tables have been carefully prepared of the curable and incurable, and of the average per cent. of cures and deaths, of the number of epileptics, idiots, and of homicidal and suicidal patients, of their state, whether married, single, or widowed, or of their condition of life. It appears that the proportion of pauper lunatics to the population is considerably larger in Wales than in England; and that in England and Wales the whole number of females is greater than that of males in proportion to the whole number of each sex.

### IX. CRIMINAL LUNATICS.

Persons who have been acquitted of crimes, or discharged on the ground of insanity, are either sent to Bethlem or to county or private asylums. There are 224 criminal lunatics so confined in England, 76 in county asylums, 61 in licensed houses, and 85 in Bethlem, besides two at Norwich, in the lunatic ward of the union workhouse. Of 137 confined in county asylums and licensed houses, there are —29 for murder, 4 infanticide, 9 stabbing, shooting, and attempting to drown others, 1 manslaughter, 5 arson, 1 detestable crime—making 49. Thus there are 49 out of 137 confined for atrocious offences; and it seems clear that such should not be associated with ordinary lunatics. The others are cases of theft, minor assaults, and other misdemeanours, "to which comparatively little objection can be made to their associating with other patients." When it is considered that there are so many confined for atrocious offences; that although often attempted it is difficult to conceal from the other patients that their associate is a criminal lunatic; that there are no proper wards to prevent escape and that the feelings of the relatives of patients must be outraged on criminals being forced into their society, the commissioners have good reasons for recommending that arrangements should be made for the separate care of this class, either with one or more public institutions (as Bethlem), or that a separate class should be formed in a convenient prison, separate from the other prisoners.

### WALES.

The Commissioners conclude their Report by bringing under the Lord Chancellor's special consideration the "very destitute and neglected state of the insane poor in Wales." In 1843 there were 1177 pauper lunatics in Wales, 77 of whom were in English county and licensed asylums, 90 in union workhouses, and 1010 boarded with their friends or elsewhere. There is but one house in Wales licensed to receive 36 pauper patients, besides the old prison at Haverfordwest, which has been so strongly animadverted upon. Mr. Williams, the principal medical practitioner at Denbigh, after enumerating several instances of neglect, says,

> "The state of the Welsh lunatic, in general, is most pitiable and miserable,—with no place of protection in his own country; and the only alternative is an English asylum, where no real good can be effected, and that at an enormous expense to his parish or his friends."

One case he mentions of a man (who had been a student at Oxford) who was confined in a small room, unshaven and uncleaned, for 20 years!

The Commissioners were shown a letter addressed by a parish officer to the proprietor of a licensed house. We reprint it, as it speaks volumes:

> "Blaenbwch, 19 Dec. 1843.
>
> Sir,—We have got an insane female pauper of the Union of Buillht, Breconshire: she has been so for some years. Something has took her in her limbs about two years ago, until she is quite a cripple. I suppose it is owing to being kept in a close place, having no practice to walk. Please to write me the lowest you charge per week."

We feel that any comment on this is superfluous. "The close place," and "no practice to walk," in which her sad life must have been spent for so long a time,—for years before it crippled her;—the parish official first attributing the loss of her power of motion to an indefinite "something which took her in her limbs," and then his glimmering of common sense that this something was "the close place," and "no practice to walk,"—and then the inquiry as to "the lowest you charge per week," as if the whole had been, and was, a mere question of economy,—and the same "close room" and "no practice to walk" would still be the unhappy woman's lot until death rescued her—if the charge "per week," was not "the lowest;"—is a picture of the misery to which some of the poor are still subjected, on which Crabbe, with his stern truthfulness, might have founded one of his harrowing tales, though he would have been incapable of conveying in the same compass the same truths as this unconscious overseer.

That this misery is not confined to one place, we quote the following from a letter of the Dean of St. Asaph, dated 28th Oct. 1842:

> "I have seen one secured in a dark and loathsome shed, lying extended upon straw (for the space did not admit of his standing erect), in a state of filth that I dare not describe. A second was fettered and manacled, and basking in the public street, exposed to the rude gaze of the thoughtless passers by. A third I have seen led about the streets, and even to church, in the restraint of a strait-waistcoat. A fourth (I copy from a letter now before me of a justice of one of the Welsh counties) died some time ago in the most deplorable state, having been, for about fifteen years, chained like a wild beast in an outhouse."

The Commissioners conclude their Report with 25 suggestions for the amendment of the law, all of which, except those which relate to details of no general interest, we have previously alluded to or discussed.

This article has extended itself beyond the limits we had originally intended, from the quantity of valuable matter in the Commissioners' Report, all of which we have laid before our readers in a condensed form. Such a Report may be in parts both erroneous and deficient: on the one side, it may occasionally convey stronger impressions of abuses than the whole exposition of the case would warrant; but, on the other hand, how much of the misery and wretchedness which lunatics suffer from mismanagement, is to the Commissioners as a sealed book. The physical causes of misery, the chains, the dirt, the wretched rooms, all that directly meets the eye may have been observed; but yet, as it is the direct interest of proprietors to conceal any abuses, or to gloze them over, it is not improbable that they have, on the whole, understated these, rather than overstated them. But the mental misery suffered from a sense of degradation, from confinement, and from a want of forbearance, from the insolence and harshness of attendants, is almost wholly concealed. This is the suffering to which the private patients are especially exposed; of those whose will before has been their law; who find themselves at once subjected to the despotic control of others; imprisoned, manacled perhaps, and subjected to the constant society, to the gibes, the coarse jokes, the manifold impertinences of vulgar-minded attendants who keep them in subjection, either by the threats or the application of physical force. This "insolence of office," this close companionship with menial attendants, are the miseries which the educated and refined feel so bitterly, and (as their public and private revelations show,) look back to with so much horror: many of which escape the notice of the medical superintendent, and few of which can be discovered in the short and annual visits of Commissioners, but lie hid in the hearts of those who know their own bitterness. But these are deficiences inherent in the subject itself where the whole truth cannot be known; deficiencies which do not diminish the importance of the partial truths disclosed in this valuable document, which contains information which all should be acquainted with.

We heartily wish that this Report may lead to two grand improvements: one is the appointment of a central body of visiting commissioners empowered to visit annually all the lunatic asylums in the kingdom, and to make an annual report to Parliament upon them. This will be a check upon these abuses, which always do and must attach to the exercise of despotic power, especially when subject to the secondary influence of interest; and as the law gives almost despotic power to superintendents and proprietors of lunatic asylums and governors of workhouses, over 20,000 human beings, it is but just that these individuals, to whom it has delegated such power, should be minutely responsible to its authority, and under its constant and careful supervision. This will be of advantage both to the rich and the poor, as both are subject to the same abuses of misused power. The other desideratum is the general erection of county lunatic asylums. Such asylums should, like our hospitals, be regarded as the proudest monuments of our age,—monuments which will be indications to the future inquirer, that wealth, and commercial greatness with the epicurean selfishness which it tends to foster, had not wholly corrupted England; that she was not alone remarkable for her mechanical arts, for her railroads, steamvessels, and manufactories; that if the age of the beautiful was passed, and she could no longer build the lofty rhyme or the gothic cathedral, or embody ideal beauty on the canvass or in stone, she had at least brought her wealth, her science, her mechanical skill, and general practical knowledge, to alleviate the diseases of the poor, and opening wide her hand, even to prodigality, had over the whole breadth of the land, embodied the divinest of the virtues—Charity.

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## Art. II.

*A Practical Treatise on the Diseases peculiar to Women, illustrated by Cases derived from Hospital and Private Practice.* By Samuel Ashwell, m.d. Member of the Royal College of Physicians, Obstetric Physician and Lecturer to Guy's Hospital.—*Lond.* 1844. 8vo, pp. 754.

During the somewhat tardy publication of the successive parts of this work we have noticed its progress, and briefly mentioned the topics on which it treats. Now, however, we are enabled by the completion of the treatise to form an opinion of it as a whole, and to judge how far Dr. Ashwell has succeeded in accomplishing the purpose with which he commenced it some years ago.

> "My aim," he says, in the preface to Part I, "has been to produce a treatise on female diseases, so true, simple, and practical, that it may form a safe and efficient guide to the elucidation and curative treatment of many at least of these intricate, rapidly progressing, and dangerous maladies."

Such was his purpose; it is no more than justice to say that he has fully performed it. The book is, what its author strove to make it, essentially a practical treatise; a simple, truthful record of the results of twenty years' experience. To the young practitioner it will be invaluable, since it supplies for the first time a want which he must long have felt, while those who have had most experience will yet find something to learn, much to commend in a book which shows so much patient observation, practical skill, and sound sense. But our praises may seem to require some justification; the best we can offer will be given by as complete an analysis of the work, as our limits will allow.

The present volume treats almost exclusively of the diseases of the unimpregnated state; those incidental to pregnancy and childbed are announced as the subject of a second. Dr. Ashwell has not, however, confined himself quite strictly to this arrangement, having introduced a notice of one or two morbid conditions which derive their chief importance from being complicated with pregnancy. The classification of diseases of the uterine system adopted by the author, is the simple division into functional and organic. The functional are mainly dependent on derangements of menstruation, which Dr. Ashwell regards as of more importance when they affect the regularity of its return, than when they merely alter the quantity or quality of the secretion. We cannot avoid noticing how this fact tends to substantiate Bischoff's and Raciborski's opinions with reference to the cause and signification of the menstrual flux. It is to be supposed that when the constitution is so far disordered as to interrupt the regularity of the periodical matûration and discharge of ova, there must be some graver cause in operation than would suffice to modify the character or quantity of the sanguineous discharge with which this process is attended.

The first functional disease treated of is *chlorosis*, which is distinguished into the mild, the inveterate or confirmed, and the complicated variety. The complication of chlorosis with amenorrhea is one of the most common forms, and by no means the least dangerous, since it not unfrequently happens that when long continued it gives rise to disease of some important organ, as the brain; or of the digestive apparatus, or of the lungs, and thus induces a fatal issue. Its association with hematemesis is not unusual where amenorrhea has existed for some time; but though patients are often reduced by the hemorrhage to an alarming state of anemia, this is a form of disease which under judicious treatment generally has a favorable termination. It is, however, a form often mismanaged, and that not merely by the inexperienced practitioner. The remarks of Dr. Ashwell on this very point, which follow the relation of some cases, are so much to the purpose that we subjoin them here:

> 'Hematemesis occurs more frequently than is supposed; and in connexion with so much pain, fulness, and congestion in several organs as might appear to justify active treatment. I have seen bleeding, purging, and lead, lavishly employed; but with decidedly bad effect. In all the four cases narrated, there was anemia, quick, irritable pulse, and excitement, precisely the symptoms of chlorosis, and such as may without difficulty be distinguished from similar symptoms dependent on acute inflammatory disease. The transient neuralgic character of the chlorotic pains, notwithstanding their severity, the amenorrhea, countenance and pulse, must lead to a correct diagnosis, and to modified and local treatment. The great indication is, either to establish or to restore the catamenial function, and to attempt the attainment of this point, even by the empirical use of emmenagogues, bad as the practice may be, is less injurious than a full pursuance of the antiphlogistic plan. Bloodletting can seldom be required. On onė occasion I visited a chlorotic patient who had been bled from the arm for the relief of thoracic fulness and difficult respiration; she was partially and temporarily relieved. It was thought advisable to repeat the bleeding; and nothing could be more conspicuous than its bad effects. Her prostration of strength was extreme; the breathing was more laborious; and an anasarcous state of the body was universally apparent. Nor is it less important to reiterate the caution against excessive purging, especially where mercurial or drastic medicines are employed. The first object, doubtless, is to procure, by proper aperients, healthy and regular evacuations; but the anemia of the patient must be increased by their undue exhibition—a practice so common that some individuals doubt whether more harm than benefit has not accrued from their use. Let this be as it may, it is quite true, that the evil results of such a plan are not confined to the stomach and bowels themselves; the irritation and flatulent distention of the intestines leading to aggravation of the chlorosis, and to nervousness and distressing sinking, very difficult to be borne; and yet with such an increase of disorders, I have known mercury and

aloes persevered in for weeks. So strong is the prejudice in favour of a 'good active purgation.'" (pp. 42-3.)

The other forms which he notices are chlorosis with chronic derangement of the digestive organs, with functional affection of the cerebrum, which sometimes reaches a most distressing severity, and continues for months or even years, without giving rise to structural change, with ascites, and with disease of the lungs. These complications do not occur indifferently at all ages, but some are more frequent at one time of life, others at a different period. Chlorosis alone, independently of amenorrhea, is a disease of early life. Associated with suppression of the menses it may be met with at all ages; but is seldom found conjoined with phthisis, except between puberty and the thirtieth year. The author's general observations on the treatment of chlorosis are such as might be expected from an experienced physician. His recommendation of the iodide of iron in cases of chlorosis associated with a strumous habit may be new to some of our readers. Dr. Ashwell employs it in the following form:

R Ferri Iodidi, gr. xvj.
Tinct. Calumbæ vel Gent. Co. ℥j.
Aquæ Destillatæ, ℥vij. ft. Mist.
Sumat cochl. ij magna bis terve quotidie.

The chapter on *amenorrhea* contains a careful examination of the various remedies that have been reputed to possess emmenagogue properties, which the young practitioner may often consult with advantage. Under the head of *vicarious menstruation*, the author mentions the occurrence of leucorrhea in place of the natural uterine secretion. He most frequently met with it in delicate and susceptible girls at the commencement of menstruation, or in weak and exhausted women. It occurs at the regular period, and may last as long, and be as abundant as the natural secretion, though quite devoid of colour. In cases were menstruation does not appear, the periodical return of this discharge removes all suspicion of congenital defect or malformation. The constitution too does not suffer as in chlorosis and amenorrhea, provided there be no excessive mucous discharge in the intervals of this periodical secretion. It is seldom, however, unless change of air be tried, or some appropriate course of treatment adopted, that it is succeeded by the flow of the catamenia, though to a certain extent the views of Dewees may be correct, who regarded it as a slow development of the menstrual function. Its occurrence is associated with general debility, and requires the use of tonics, especially iron, and of other means calculated to impart constitutional vigour, and thus to induce healthy menstruation.

The chapter on *dysmenorrhea* is followed by a collection of formulæ, and a hundred pages further on, we meet with a second; both very useful, but out of their proper place, which should be either at the beginning or end of the volume.

From *menorrhagia*, the author passes by a natural transition to the subject of *leucorrhea*; in which disease the mucus furnished by the lining membrane of the uterus, vagina, or other parts of the generative apparatus is increased and altered. He divides it into the *common* form, which is often *mild*, though sometimes *acute*, the *inveterate* and *chronic*, and the *symptomatic* leucorrhea; rejecting the arrangement into the uterine and vaginal varieties. The acknowledged difficulty of ascertaining, in a large number of cases, from which of these two sources the discharge flows, is his reason, and we think a valid one, for preferring a classification founded on the severity of the symptoms, and the consequent difference in the treatment required. Leucorrhea indeed may continue for a very considerable time, and be attended with symptoms of great severity, without giving rise to any change of structure. The supposed frequency of affection of the os and cervix uteri in connexion with leucorrheal discharges, which has been regarded as furnishing one of the most valid reasons for a far more general use of the speculum than is accordant with English feelings, is regarded by Dr. Ashwell as a mistaken notion. The cervix uteri indeed is occasionally soft, and the os patulous, or, at least, these tissues are all found to be relaxed. In several instances in which he used the speculum, the cervix was pale; in more acute cases slightly red; twice he found it of a deep crimson hue; but he never observed either erosion or ulceration, except when there was suspicion of venereal taint.

Besides the more ordinary forms of leucorrhea, there is one variety which Dr. Ashwell considers to be somewhat allied to hydrometra, "inasmuch as the contents of the uterus in the latter disease are not always serous, but sometimes albuminous or muco-purulent secretions." The description he gives of it, however, tallies exactly with Sir C. Clarke's account of "inflammation of the mucous membrane of the uterus terminating in secretion of pus."* Neither do we see any reason for rejecting Sir C. Clarke's supposition as to the nature of the affection ; and to the mode in which the matter is prevented escaping by contraction of the cervix, or by adhesion of its walls as the result of inflammation, or by the mucus of the glands of the cervix obliterating its aperture.

*Inflammation of the cervix uteri*, so ably described by Sir C. Clarke, is conceived by Dr. Ashwell to be of very unusual occurrence. He states that "out of nearly 1000 cases of sexual disease, treated at Guy's, I find that inflammation of the os and cervix has happened only twenty times." This fact is important, for many practitioners we believe form an exaggerated estimate of the frequency of its occurrence.

A short chapter is devoted to the diseases attendant on the *decline of menstruation;* in which we find some very wise cautions with reference to their management. The writer points out the serious mischief that may result from attributing them without the most accurate enquiry to debility, rather than to repletion.

> "Let it be remembered that an accustomed evacuation is about to cease, or has finally disappeared; that the patients have been previously healthy, and that the probability therefore is that the weakness is apparent not real. If, for instance, because there is langour and inactivity, a slow pulse, torpid bowels, and depression of mind, stimulants and generous diet are allowed, some important organ will become congested, the brain or the lungs, and either suddenly fatal or structural disease may occur. I know not how often, but certainly very frequently, such errors happen; and it is therefore the more necessary to urge especial caution." (p. 200.)

He next lays down clearly, but in a few words, the golden mean to be observed in their treatment; and then proceeds to give an account of *hysteria*, concerning which affection he says well all that on a subject so trite there remained to say.

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* On Diseases of Females, Part ii, p. 153.

That distressing complaint, the *irritable uterus*, to which the late Dr. Gooch first directed attention, comes last on the author's list of functional diseases. But though he classes it, in accordance with common opinion, among functional disorders, he does not seem inclined to subscribe to the notion of its purely neuralgic character, but is disposed, in common with Dr. Dewees and Dr. Lee, to regard it as a modified form of inflammation of the cervix uteri. He rests his opinion as well on the symptoms of redness, heat, permanent pain and tenderness of the cervix, which attend the malady, as on the nature of the remedies,—cupping, bleeding, aperients, and spare diet, which, even in Dr. Gooch's own cases, appear to have been of essential service. When long continued, indeed, he believes that it induces organic changes, and relates at p. 244, an instance in which induration and ulceration of the cervix supervened after six years of suffering from hysteralgia. A slight degree of prolapsus uteri is often associated with it, and Dr. Ashwell has often found that the introduction of a pessary has afforded great relief, not only in cases when this existed, but even when there was no marked uterine descent. Local depletion is often very serviceable, and within the last few years he has made frequent use of scarifications of the os uteri, which he practices in the manner recommended by the late Mr. Fenner. A suitable speculum is introduced into the vagina, and seven or eight crucial incisions are made with a cataract knife, and will frequently yield three or four ounces of blood. The operation is painless, and the wounds speedily cicatrize, and Dr. Ashwell states that he has found this mode of depletion prove most useful, not only in immediately relieving the characteristic pain, but also in restoring the uterus and especially its cervix to a healthy state.

The subject of *organic diseases of the uterus* is introduced by some very sound and practically useful remarks on their symptoms, diagnosis, pathology, and prognosis; and on the means of investigating uterine disease Some of our readers will probably feel surprise at finding hard tumours of the walls of the uterus,—the fleshy tubercle of many writers,—classed by Dr. Ashwell among malignant diseases. High authorities are arrayed on both sides of the question; the reasons on which he grounds his opinion of their malignant character are these:

> "1. They possess the structure of compound adventitious cysts, the basis of this class of heterologue formations. 2. In the colour of the contained mass, and in the arrangements of the membranous septa or bands, the containing tissue; they are identical with scirrhus. 3. In hardness, occasionally justifying the application to them of the term stone cancer: they are not to be distinguished from the varieties of carcinoma already mentioned. 4. They occur very frequently in conjunction with growths of undoubted malignancy in other parts of the uterus. 5. And lastly, they possess an especial attribute of malignancy, incurability." (p. 289.)

He might have quoted the statement of Professor Valentin* in support of the opinion of the malignancy of these tumours, whose investigations have led him to conclude that their structure coincides in every respect with that of true scirrhus.

These growths are attended by an entirely different class of symptoms, according as their development takes place towards the surface of the uterus, or towards its cavity, constituting in the one case *subperitoneal*, in the other *submucous* tumours. The early stages of both forms are often unattended by any symptoms, and even when they have attained a very considerable size, they frequently occasion little inconvenience, except what results from mechanical pressure. The occurrence of pregnancy, however, in a uterus which is the seat of one of these tumours must be regarded as a great calamity. The increased supply of blood which the uterus then receives gives rise to inflammation and softening of the tumours, and if they be of large size, to death soon after parturition. This circumstance suggested to Dr. Ashwell the propriety of inducing premature labour in cases where these tumours are known to exist, in the hope of thus avoiding that disintegration of their texture which seldom fails to occur in the latter months of pregnancy, and the consequent danger to life which ensues if parturition takes place at the full period. He published his views on this subject some years ago in the 'Medical Gazette,' and their propriety is now generally acquiesced in by the profession. The justification of this practice rests mainly on the following facts: that death after labour complicated with these tumours is almost entirely attributable to the softening and unhealthy suppuration that go on in the growths themselves, the uterus being but little affected. And further, that these changes do not commence early in pregnancy, but that utero-gestation may often proceed as far as the sixth or seventh month without occasioning serious injury, while premature labour then induced rarely gives rise to constitutional mischief, may sometimes save the child, and will generally preserve the mother. In estimating the peculiar danger of labour thus complicated when it occurs at the full time, it should be borne in mind that whereas in difficult labour from pelvic distortion the uterine action is generally efficient, and the amount of the difficulty is appreciable during the progress of the labour, so that the forceps or perforator can be employed according as the one or other may seem to be indicated; the reverse of all this is the case where uterine tumours are present. The action of the womb is generally feeble, as though the fibres of the organ were in a measure paralysed by the morbid growths; and the degree of mechanical impediment cannot be correctly estimated, nor the extent of injury that may be inflicted on the tumours foreseen. Under such circumstances Dr. Ashwell advises the induction of premature labour, without reference to the fœtus, in order to preserve the mother's life. This recommendation accords with the principles of British midwifery, and is too in our opinion much more agreeable to the dictates of sound morals and humanity, than that sentimentality which in France has so long opposed the practice, but which is disappearing even there, under the common sense of Professor Dubois. The operation, however, is not to be resorted to indifferently wherever pregnancy coexists with a tumour of the uterus or its appendages. "If the tumour be moveable; if it be so situated that the enlarging and hard uterus has pushed it out of the way, and does not make painful pressure upon it; if it be the first labour so complicated; or if it be the second or third, the growth not having increased during the intervals of the successive pregnancies, then 'sequere naturam' should be the guiding precept. If, however, the opposite of these circumstances present themselves, it would be unwise to run the risks which a labour to be naturally prosecuted at the full time could not fail to induce." (p. 330.)

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* Müller's Archiv, 1838, patholog. Jahresbericht, p. 59; and Valentin's Repertorium, 1837, p. 274.

Nor is it a question of less importance to determine the period of pregnancy at which it may be expedient in each case to bring on premature labour. Something must depend on the time when the practitioner first sees his patient. If she have come early under his notice, and if he possess the tact requisite for making an accurate examination of the tumour and its attachments; and if he have accurately noted the first attacks of pain in it, and the constitutional impression produced by them; he will not hesitate much as to the precise period when to adopt this measure. "I should not delay, if there were constant pain in or near the growth; if the respiration were embarrassed; and if, as a consequence of these conditions, the pulse were quick and irritable, the extremities œdematous, and the functions of the kidney and skin were partially or greatly interrupted. When such an amount of evil exists, or rather before the entire of these symptoms is complete, the moment has arrived to empty the uterus; and I venture this opinion with the more confidence, conceiving that pregnancy will rarely give rise to this amount of mischief till the sixth or perhaps the seventh month of gestation; when if turning shall be required it may be accomplished with only the usual difficulties and hazards." (p. 333.)

In the treatment of these tumours when unassociated with pregnancy, Dr. Ashwell has obtained very encouraging results by the use of iodine.* He employs it both externally and internally, and has found it, when judiciously administered, very seldom produce constitutional injury. He has known tumours of the cervix uteri entirely disappear under its use, and when seated in the walls, or projecting into the cavity of the uterus, has found their further growth to be controlled by the same remedy; though, when occupying the latter situations, they do not become resolved or disappear. One case which he relates would seem to render it probable that the action of iodine upon these growths is sometimes very energetic, though the history of a patient suffering from this disease, communicated by Sir J. Clark to Dr. Ashwell, proves that the spontaneous breaking down of the structure of the tumour may take place wholly independent of the influence of any medicinal agents. Dr. Ashwell's case is that of a young unmarried woman, who, during eight months, took iodine as a remedy for a large tumour supposed to proceed from the uterus. She had, during this time, been an in-patient of Guy's Hospital, and on leaving that institution, she found the tumour so much softer as well as diminished in size, that she imprudently increased the dose of the tincture, and began to rub in very large quantities of the ointment. She had not long continued this dangerous practice, before she was attacked by all the symptoms of poisoning with iodine, and while suffering from them, she was again seen by Dr. Ashwell. Uterine hemorrhage had come on while she was taking the medicine, and on inspecting the discharge, it was found to contain masses of various sizes of broken down scirrhous growth. These continued to be discharged for some time; and when Dr. Ashwell ceased his attendance some months afterwards, no perceptible enlargement of the abdomen existed.

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* An Essay on these tumours, by Dr. W. C. Roberts, in the New York Journal of Medicine for Sept. 1844, contains further proof of the good effects of iodine in their treatment.

The submucous variety of these tumours is less within the control of remedial measures than the subperitoneal. Though their symptoms are generally not alarming, they sometimes give rise to very serious hemorrhages, which have been known, by their frequent occurrence, to prove fatal. They differ in structure from ordinary polypi of the uterus, nor do they, except in very rare cases, become pediculated. They differ, too, in sensibility and in vascularity; the alarming hemorrhages which they sometimes occasion, coming entirely from their investing membrane, while their substance appears to be wholly destitute of vessels. In many instances, their connexion with the uterus is not such as to admit of their removal by ligature; and even when its application is practicable, far less favorable anticipations must be formed of the result than when it is used to remove an ordinary polypus. In most instances, palliative treatment to restrain their growth and check the hemorrhage to which they may give rise is all that can be attempted.

From organic diseases of the uterine parietes, Dr. Ashwell passes to those affecting the os and cervix uteri, and enters on the consideration of cancer of the womb. He asserts the curability of this disease in its early stage, and supports this opinion partly by analogical reasoning, founded on the results obtained by the use of iodine in the treatment of hard tumours of the uterus, partly by the statements of Montgomery and Duparcque. There is a vagueness, however, in the manner in which M. Duparcque speaks of "the greater part of confirmed cancers of the womb, succeeding to congestion and ulceration, capable of being cured," which is very unsatisfactory. Neither does Dr. Montgomery's account of what he conceives to be the first stage of cancer of the womb appear to us by any means conclusive. He is of opinion* that the disease begins in the glands of Naboth, which may be felt hard, like small shot, owing to thickening of their coats by the deposit of scirrhous matter. It is unnecessary to trace his description of the various stages through which, from this commencement, he supposes the disease to pass, for this theory is too much at variance with what we know of the mode in which cancer commences in other tissues for us to subscribe to it without more conclusive evidence than is afforded by the two illustrative cases related by Dr. Montgomery. Whatever difference of opinion may exist as to the characteristics of the early and possibly curable stage of cancer, a sad uniformity prevails with reference to the signs that betoken all hope of cure to be vain, and all remedies inefficient. When once softening and abrasion have occurred, the palliation of symptoms becomes the sole care of the medical attendant. Still the opinion that a case is hopeless is not to be hastily formed, still less to be hastily expressed.

> "It would be as wrong even in such a state, at once to announce its real character, as it would be to abandon the patient to insufficient and partial efforts of palliation. There is yet much to be done; and as it is impossible to say how long life may be protracted, so we ought by every possible means, to smooth the approach of death. Lately, in a case where the hemorrhages although small were frequent, and where the os was fissured and granulated, ulceration being erroneously supposed to exist, an abandonment of all active treatment was recom-

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* Dublin Journal of Medical Science, Jan. 1842.

mended. And yet in this instance, the application of a very strong solution of lunar caustic, daily injections of a saturated alum lotion, a regulated diet, and a sparing exhibition of narcotics have kept the disease stationary for three years,—four months having been predicted as the utmost extent to which life could possibly be protracted. Such opinions should not be hastily given. There is neither empiricism nor fraud in an opposite course. It is certainly wrong to promise a cure; but if life can be prolonged for months without painful treatment, and with some considerable measure of comfort, it is right to afford the patient such a chance of an arrest of the malady." (p. 406.)

The management of the discharges in cases of ulcerated carcinoma is a matter of great practical moment, and one on which the opinions of a man of large experience are well worth learning. Dr. Ashwell justly censures the indiscriminate employment of stimulating and astringent injections, and recommends that so long as the discharge is not excessive, acrid or offensive, tepid or cold water be used once or twice a day. This simple measure often procures to the patient much comfort; but when the discharge becomes excessive or offensive there is generally an anxiety to employ injections. When the discharge is thin and ichorous, and the parts relaxed, Dr. Ashwell has found the following injection used once daily, or two or three times a week, very serviceable.

℞ Sinapis pulver. ʒij.
Aquæ ferventis, ℥xvj. M. ft. injectio.

If reduced to such a strength as only to excite a little tingling, he has seen this remedy if used at the very commencement of the ulceration arrest and improve the character of the discharge and allay pain. As narcotics, to be used at a temperature regulated by the patient's feelings, and the amount of hemorrhage, he employs the following.

℞ Liq. Opii sedativ. ♏ xxx.
Inf. Valerianæ, ℥j.
Mucil. Acaciæ, ℥ss. M. ft. Enema.

℞ Flor. Anthemidis.
Semin. Lini Cortus. aa ℥ss
Aquæ fervid. ℥vj. Macera et cola, dein adde Opii, gr. ij, iij, vel vj. Half to be used at a time.

℞ Fol. Belladonnæ Exsicc. gr. xij.
Aquæ Fervid. ℥vj. M. ft. Enema.

or ℞ Olei Terebinth. ℥ss.
Ovi unius Vitellum. Tere simul et gradatim adde Decocti Hordei tepid. ℥x.

His favorite astringents, especially in the earlier periods of the confirmed malady are

℞ Decoct. Secalis Cornut. ℥xiv.
Argenti Nitrat. gr. xx.
Tinct. Catechu, ℥ij. M. ft. Injectio vaginalis.

Four ounces to be used three times a day. The decoction is prepared by boiling an ounce of the bruised rye in a pint and a half of water, down to a pint.

℞ Inf. Quercus, ℥iv. Pulv. Gallarum, gr. xxx.
Tinct. Catechu, ʒij. M. ft. Injectio vaginalis.

℞ Argent. Nitrat. gr. xv. ad ʒj.
Aquæ Rosæ, ℥xvj. M. ft. Injectio vaginalis.
Three or four ounces to be used three or four times daily.

In the employment of injections, however, it should be borne in mind that if they fail to check the amount and diminish the fætor of the discharge and especially if prolonged pain succeed their administration, they are doing harm and should be discontinued. Dr. Ashwell appears like Dr. Churchill to have seen much relief follow the use of strong solutions of the nitrate of silver, both in diminishing the quantity, odour, and acrimony of the discharge, and has observed results equally favorable from the use of a solution of ʒj, or ʒiss of the sulphate of iron to a pint of distilled water. With the advance of the disease, however, the use of injections must be laid aside in consequence of the pain and bleeding which follow their administration. Tepid water, or other unstimulating applications must, however, still be used as ablutions.

We have condensed Dr. Ashwell's remarks on this subject as much for the illustration they afford of the practical tendency that pervades the whole book as for their own intrinsic value. There are many more observations on the management of cancer uteri which we could have wished to extract; but to which we must content ourselves with referring.

From carcinoma the author passes to simple ulceration of the os and cervix, which he treats of briefly, and then taking up the consideration of corroding ulcer of the uterus, reverts to malignant diseases of the organ. We cannot but think that without at all diminishing the practical value of the work, it would be possible to make some nearer approach to a scientific arrangement of its contents than Dr. Ashwell has attempted. Both corroding ulcers and cauliflower excrescence of the uterus are extremely rare diseases, especially the former, of which Dr. Ashwell has seen but two examples in twenty years. Both these affections are regarded by him as of malignant character. He states that in those cases in which he has examined malignant ulceration of the cervix uteri by means of the speculum, he has been struck by its close resemblance to lupus in external parts; to which the whole character of the morbid processes in this disease seems very analogous. His remarks on these affections contain nothing very novel; he considers both, however, to be more amenable to treatment in an early stage than other forms of malignant disease.

The succeeding chapter on *occlusion and rigidity* of the os uteri is one of great practical importance. Dr. Ashwell shows that occlusion of the os uteri is by no means so hypothetical an occurrence as has been imagined by some writers; and criticises, in our opinion with great propriety, the supposition that most of the alleged cases of imperforate os have in reality been instances in which the orifice of the uterus was removed from reach by extraordinary obliquity of the uterus. It is our belief indeed that obliquity of the uterus has had an importance attached to it in books far greater than was ever substantiated by observation of nature's proceedings. The diagnosis, then, being attended with no great difficulty, the treatment to be adopted becomes the next question, and is one on which there exists considerable difference of opinion. Some authors, among whom is Naegele, recommend the employment of pressure by the finger, a female catheter, sound, or bougie; while others with Dr. Ashwell advocate the use of the knife. The author shows that Naegele's mode of proceeding is applicable only to those cases in which the occlusion is very slight; since the forcible use of the finger or of a catheter to make an artificial os must cause great contusion, and render the supervention of uterine inflammation extremely probable. But, not merely does he consider the use of the knife to be indicated in cases of actual occlusion of the os, he regards its use as justifiable in that far more frequent class of cases in which the orifice of the uterus is excessively rigid and undilatable. In such cases three alternatives present themselves; either incisions may be made into the os uteri, or artificial dilatation may be attempted, or the patient may be left to nature, which indeed amounts to little else than abandoning her to certain death Forcible dilatation of the os uteri in such a case has happily now become matter of history or nearly so; but a degree of apprehension exists with reference to the possible hazards of incision, which may lead to too great reliance on other means, and to too tardy a recourse to the operation. On this point Dr. Ashwell gives the following useful cautions:

> "It may then be assumed, that we are not justified in protracting the employment of the knife till the patient is nearly exhausted by the continuance and severity of the expulsatory efforts; the indications of approaching collapse being apparent in a quick and feeble pulse, a cooling surface, hurried and short respiration, a subdued tone of voice, a tender and tympanitic abdomen, and a gradually diminishing uterine pain. Many instances are on record precisely of this kind; and the event, in nearly all proved fatal. Nor ought we to hesitate about incising the cervix, when the violence and frequent return of the uterine effort threatens rupture of the womb. If there be distressing and constant pain about the neck or body of the uterus, or in any other part; if the countenance become turgid and dark; if perspiration issue at every pore, and the pulse be full, strong, quick, and incompressible; and if these symptoms continue, although perhaps somewhat lessened by bleeding and antimony, there can be no doubt that recourse should be had to incision. It is impossible to fix a precise limit during which a patient may be safely left to unaided efforts: time is not the only condition, although an essential one in every rule regulating interference in obstetric cases.
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> "There can be no doubt that in many instances of rigidity, a free abstraction of blood, the exhibition of one sixth, one fourth, or one half grain every hour of tartarized antimony, with or without opium, till it produce nausea, will accomplish the dilatation. No sensible practitioner would feel himself warranted at once to propose incision; nor would such an individual consider himself justified in not performing it when other means had failed. While, on the one hand, I am anxious to avoid the imputation of rashness, I am, on the other, if possible, more desirous to avoid the imputation of timidly shrinking from a procedure absolutely essential to a patient's welfare." (p. 453-4.)

Dr. Ashwell next describes the mode of performing the operation, but this is so simple a proceeding that we need not enter into detail respecting it. It may, however, be well to mention that the extension of the incision by laceration very rarely reaches beyond the limits of the vagina, and that much apprehension need not, therefore, be entertained on that score.

We now come to the third part of the work, which has but just appeared. It opens with a chapter on *polypus uteri,* in which we do not find anything of particular importance. For the removal of these growths, Dr. Ashwell prefers the ligature to excision, and in tying them he employs Gooch's double canula, with a little windlass appended to it, for the sake of greater convenience in tightening the thread.

*Physometra* and *hydrometra* are the subjects of the next chapters.

Dr. Ashwell has never met with an instance of idiopathic uterine tympanites, but does not, on that account, deny its possibility, as has been recently done by Profs. Naegele and Stolz. Authentic cases of physometra are on record; the most recent one with which we are acquainted was related by M. Tessier, in the 'Gaz. Médicale de Paris,' for January 1844; and on account of the rarity of the affection, it may be worth while to extract the patient's history. She was a married woman, aged 43, and came under M. Tessier's care for chronic metritis associated with hysterical symptoms. At that time there existed considerable and easily appreciable swelling of the body and cervix of the uterus; the patient had suffered from leucorrhea for fifteen years, and had not menstruated for two and a half months, and she complained of pain in the sacrum and hypogastric region, and had frequent attacks of hysteria.

In the course of a few months, the abdomen began to swell, and the leucorrhea diminished considerably. The size of the abdomen now began to increase rapidly, and as the menses did not reappear, the patient suspected that she was pregnant. Examination per vaginam ascertained that the uterus was considerably enlarged; but it was easily raised by the finger, and percussion in the hypogastric region yielded an uniformly clear sound.

The menses had been absent for six months; the uterus had reached nearly as high as the navel; the patient believed herself to be undoubtedly pregnant, and stated that she had experienced sensations similar to those produced by the movements of a child. M. Tessier, however, thought her to be suffering from tympanites uterina, for neither the placental souffle nor the pulsations of the fetal heart were perceptible on auscultation; the abdomen yielded everywhere a clear sound, and the uterine tumour was remarkably light. At this time the patient was seized one evening with violent pains like those of labour, proceeding from the sacrum and umbilicus, and shooting into the pelvis, which were immediately followed by the expulsion of a large quantity of offensive air from the vagina. During the escape of this gas, the abdominal tumour diminished in size, and in the course of a few hours had totally disappeared. The escape of this gas was not attended with the discharge of coagula, or of a mole, or of any other foreign body to the putrefaction of which its generation might have been attributed. Three years had passed from this occurrence to the date of M. Tessier's report, in which he mentions that his patient has not become pregnant, but that the above-mentioned phenomena had occasionally recurred.

Dr. Ashwell relates an equally indubitable case of *hydrometra.*

"Miss —— is 29 years of age, stout, and has hitherto enjoyed tolerable health; menstruation has often been irregular, although generally natural in amount and character. Five months ago she first discovered that during the flow of the catamenia there were discharges of water, which ceased when the period was over. Soon however, they appeared in the interval, and for the last eight or ten weeks she has never been free from watery discharges, except during the night. On no occasion has it been tinged with blood, and a careful examination shows that the secretion is limpid, very thin, entirely colourless, and free from odour. Nine or ten napkins, sometimes more, are soaked through in the twenty-four hours. Her aspect is unhealthy, her colour gone, and she is losing flesh; the pulse is quicker than natural, but the appetite has not much failed, nor are the bowels constipated; the urine is scanty, not high coloured, and there is increasing weakness.

"The cervix uteri, indeed the whole organ as well as the vagina, is healthy, not enlarged, nor at all tender; but having the feel of parts constantly under discharge. Alum and catechu are taken internally, and the strong alum hip-bath is used every day, with a generous diet. These means improved the health, and as, during the night, the discharge ceased, the patient was directed to keep her bed, and steadily to persevere with the remedies. At the expiration of a fortnight the catamenia returned, and during the four or five days they continued to flow, there was watery discharge only for two hours. The measures formerly adopted were then resumed, and there was no return of the serous secretion. When I last heard of this young lady, she had discontinued the use of medicine, and was attending to her usual duties." (p. 508-14.)

A condition of more frequent occurrence than hydrometra of the unimpregnated womb, and consequently of greater practical moment is one first described by Dr. Ashwell in the Medical Gazette, under the title of aqueous discharge from the uterus after parturition. It consists in the discharge soon after parturition of large quantities of aqueous fluid, which come away at first by gush, and afterwards continue to drain for a considerable time, the true lochial discharge and the secretion of milk being at the same time suppressed. The other symptoms attending it, seem to indicate its inflammatory origin, and a modified antiphlogistic plan has been the mode of treatment which has seemed best adapted to remove it. Dr. Ashwell himself has not met with any fatal case of this affection, but he details the history of a patient communicated to him by Mr. Bury of Farnham, in which death from exhaustion having followed the symptoms, three masses of a fungoid growth were found springing from the lining membrane of the uterus.

When treating of *prolapsus uteri*, Dr. Ashwell defends the use of pessaries with great good sense from the attacks of the late Dr. Hamilton. We have, however, already extended our notice to such a length that we can merely direct the attention of those among our readers to it, whose faith in their utility may have been shaken by the objections of the late talented but somewhat eccentric professor of midwifery at Edinburgh.

*Hypertrophy of the cervix uteri*, so readily mistaken on a superficial examination for prolapsus of the uterus, is treated of somewhat too cursorily. · Dr. Ashwell does not appear to be acquainted with the very valuable paper of Dr. Evory Kennedy on this subject.

In treating of displacements of the uterus, *inversion* of the organ comes next under consideration. Dr. Ashwell coincides in the opinion that its spontaneous occurrence is by no means infrequent, and in proof of this relates two striking instances which came under his own notice. He shows that the rapid dissolution which sometimes succeeds inversion of the uterus is by no means invariably attributable to the amount of hemorrhage which takes place; but is rather owing to the violent shock communicated to the whole nervous system by the accident. Hence the vast importance of the administration of stimulants, and of the immediate reduction of the displaced organ. In connexion with this subject there is one point on which much discrepancy of opinion has existed, and still prevails; namely whether the placenta should or should not be detached from its adherence to the womb, previously to any attempts at reduction. On the one hand, the danger of immediately fatal hemorrhage has been urged as an objection to its detachment; on the other, the difficulty, sometimes indeed the impossibility, of returning the uterus while its bulk is increased by the placenta is assigned as a reason for its separation. The question appears to us to be very fairly stated, and wisely answered in the following paragraph.

"Whether the placenta, if attached, should be separated prior to reduction, is a question on which there has been considerable difference of opinion. In neither of my cases, although I tried for some minutes, could I return the uterus with the placenta; but in neither did hemorrhage precede or follow its separation. Where the os is firmly contracted, there is little risk of bleeding, for the uterine vessels are effectually constricted at the upper part of the tumour. Reduction must be facilitated by the previous removal of the placenta, adhering as it generally does, to the fundus, the part to be first returned. Denman cautiously remarks, 'that where the placenta is partly separated, it would be proper to finish the separation before reduction is attempted; but if the placenta should wholly adhere, it will be better to replace the uterus before we endeavour to separate the placenta.' This is not sound advice; for when the placenta is thus partially separated, hemorrhage is either present or highly probable. Now if there has already been bleeding from the partial detachment of the viscus, and we know how rapid floodings sometimes are, it certainly would be very unsafe, by completing the detachment of the placenta, to uncover more of the uterine sinuses, and thus to increase the patient's danger. The better practice would be at once to attempt the reposition, trusting to uterine contraction being excited, so soon as the organ was returned into the pelvic cavity, this great point being additionally secured by the stimulus of the hand within. Denman urges as the ground of his advice 'that while we are separating the placenta, the cervix of the uterus is speedily contracting, and the difficulty of replacing it increasing, which is a far greater evil than a retained placenta.' When the cervix thus contracts, and goes on contracting, the risk of hemorrhage is slight, and the difficulty of reduction great; a difficulty which should not be increased by permitting the placenta to augment the size of the already too bulky uterus.

"We may then conclude, that where the protruded organ and its attached placenta do not together make up a large tumour, and where the os does not constrict its upper part, reduction of the whole may be at once attempted; where, however, these favorable conditions do not exist it will be wiser to insure reposition by previous separation." (p. 579-80.)

We pass over a very curious case of anteflexion of the uterus communicated by Dr. Walshe to Dr. Ashwell, in order to notice his remarks on the management of retroverted uterus. A notion has become somewhat too general, that it is sufficient in most cases of retroverted uterus to keep the bladder duly emptied by means of the catheter; and that by attention to this point the uterus will sooner or later return to its natural position. Now it is beyond all question that spontaneous reduction of the uterus has in several instances followed the repeated use of the catheter. But while the importance of attending to the state of the bladder cannot be over estimated, Dr. Ashwell remarks with great justice that the complete emptying of the bladder by means of the catheter is almost impossible; and that the bladder itself is exposed to serious injury from the gradual accumulation of urine within it, that must consequently take place. Nor indeed is this all, but it is by no means certain that the patient's sufferings will subside, or that the uterus as it becomes developed will return of its own accord to its proper situation, and no more distressing case can be conceived than one in which retroversion persists to the end of pregnancy. Compared with this danger, the risk of producing abortion by interference, and the occasional difficulty of replacing the uterus are but slight evils.

"In 1840," says Dr. Ashwell, "I was requested to see a young woman four months pregnant. Nearly a fortnight before, soon after jumping over a flower-pot in the garden, she found she could not pass her urine. She strained violently, sat over hot water, and applied gin fomentations, but all without effect. A neighbouring practitioner discovered the retroversion, drew off the water, gave an aperient, but did not attempt reposition. The symptoms grew daily much worse; the use of the catheter was attended with great suffering, and was always followed by the passage of purulent matter, and frequently of blood. Defecation could only be effected by active purgatives, for it was impossible to inject a clyster. The pulse was quick and compressible, there was constant nausea and frequent vomiting. What was to be done? I urged immediate reduction; but the attendant practitioner recommended still further delay, expressing a wish that after the use of the catheter, she should lie on her abdomen to aid spontaneous replacement. To this, most unwillingly, I was compelled to assent. Two days elapsed, bringing with them not the reduction, but aggravated sufferings. My first attempt was unsuccessful; on the next occasion, with as little severe pressure as possible, I got nearly the whole of my right hand into the rectum, while with the fingers of my left hand I tried to reach and press upon the cervix. In less than a quarter of an hour, or very little more, I succeeded. The patient, although complaining of the process, declared the suffering was nothing in comparison with what she had endured the previous three weeks. There was no amelioration to be hoped from palliative measures; every day would have accumulated difficulty and suffering; and at length, long before the term of pregnancy had expired, either puncturing the membranes or tapping the uterus, must have been resorted to." (p. 607, note.)

This case may be taken as an illustration, we think, too, as a justification of Dr. Ashwell's practice; and we believe that his estimate of the evils likely to follow from the continuance of retroversion are by no means exaggerated; while in those cases, where this accident occurs after the fourth month of pregnancy, the womb may become so impacted in the pelvis that nothing short of the introduction of the hand into the rectum will suffice to accomplish its reduction. Of course this manual interference would not be attempted without the previous use of bleeding, the warm bath, or antimony, means which greatly tend to facilitate reposition. For cases and arguments in further justification of this practice we must refer our readers to the book itself; and hasten in conclusion to notice his remarks on *ovarian dropsy*. We are glad to find Dr. Ashwell advocating the same opinions with reference to the operation of extirpation as we expressed in this Journal in Oct. 1843, and Jan 1844. The very objections that we then stated to the proceeding are assigned now by one whose experience in the management of female diseases surpasses that which falls to the lot of most: nor is it a point of small moment to bear in mind that as the cases of this operation have become more numerous, the average of fatal cases has likewise risen; a proof beyond dispute that the opposition we then expressed to the proceeding had a basis far more solid than mere prejudice.

"These considerations," says the author, after mentioning cases in which the disease has remained stationary for years, "are entitled to great weight when determining the propriety of extirpation, uncalled for by present and great evils; or where the operation from the enthusiastic views of its patrons is urgently recommended as a preventive of mischiefs which they deem, but not always on good grounds, to be prospectively inevitable. To operate, where the patient strongly desires it, from a conviction that her sufferings and the frequent repetitions of paracentesis, will otherwise prove speedily fatal, may not involve any distressing responsibility, especially where the condition of the tumour leads to the supposition, that the case is pathologically a favorable one. But there are examples selected for operation far different from this. Take, for instance a case which occurred to me a few months ago. A lady travelled to town from a considerable distance, anxious to have extirpation performed. On inquiry, I found she was 62 years of age, had never been tapped, although ovarian dropsy had existed for more than half her life. There was scarcely any suffering beyond weight and pressure, although the tumour was of immense size and partly solid. In such a case it would have been highly culpable to have operated; and yet a surgeon, over zealous about the removal of ovaries, had induced the firm belief that it ought to be done. I need scarcely add that the patient after being made acquainted with the great danger of the operation was perfectly satisfied to remain as she was. Nor will the practitioner be less perplexed and distressed by such a case as the following, which occurred within my observation not long since—a young woman, under 22 had ovarian dropsy; her countenance bespeaking excellent health, and her history confirming the impression. Without interference, many years might have been added to her existence; and as one of the fortunate incidents of life, it might have so happened that the tumour should cease to grow. But unhappily she was convinced that extirpation was proper; the operation was most ably performed, and in a few days she died. These certainly are not the cases in which removal ought to be practised. If the operation is to become established, of which I have the strongest doubt, it must be confined to examples of the malady where tapping has been already so often performed as to preclude, from the experience of similar cases, any idea that it can ever be dispensed with; and where, we are confident, that great suffering must lead to early death. Perhaps this may be regarded as too limited a view of the value of extirpation, but it is, I think, the correct one. In such cases, if the diagnosis excludes the belief that there are serious adhesions, or malignant or solid growths complicating the tumour, and if the patient strongly desires it, the operation is defensible. In all other examples it can only rest on the patient's own views of her future prospects, and on a calculation of chances. She might live several years and without much suffering; but she may die in a few years after great suffering; she determines, therefore, being courageous, and probably strongly urged by her surgeon, to run the risk of immediate death for the hope of immediate and radical cure. Whether she has done wisely to submit to such a hazard a successful operation can scarcely prove; that she has happily secured her safety, through imminent peril, such an operation does prove. Lithotomy, operations for hernia, and for securing large arteries, rest on different grounds. That they are essential to the patient's life, is a full justification of their performance; for in all, even if not dangerous at the moment, it is certainly known that life will soon be destroyed, either by fever, gangrene, or loss of blood. Such, it has been proved, has not been the case in many of the fatal operations lately performed for extermination of ovarian encysted tumours. It does not appear that statistics more favorable even than we have any right to expect, will materially change the aspect of the circumstances under which the operation is to be performed. It most probably will, from the impossibility of determining the real character and adhesions of the growth, ever remain an eminently uncertain operation. The extirpation, we are assured, by the operators themselves, in a fit case, is far from difficult: would that it were more so, for then it would not readily be undertaken! If it required as much surgical knowledge and skill to make these large and brilliant abdominal incisions as to tie the subclavian artery or to perform a trying operation of lithotomy, the lives of many women would have been already spared, and fewer would be sacrificed for the future. What would be thought of the feasibility of any other operation involving life in the most imminent hazard, if we discovered that out of sixty-seven cases where it had been attempted, it was *from absolute error of diagnosis, incapable of completion in eighteen;* that of the remaining forty-nine patients, where the extirpation was effected, *sixteen died*, and *two were not cured;* so that out of the whole number, sixty-seven, *the operation failed in thirty-six*, and *succeeded in thirty-one*, less than one half. Such results are distressing, especially when we hear no greater doubt expressed about the operation itself, but only higher confidence in its value, and greater laudation of the operators. We willingly concede presence of mind and ability to many of the extirpators of ovarian cysts; but we are unable to discover (for the later operations have been quite as unsuccessful from unfitness of the cases as the earlier ones,) that any advance has been made in diagnosis. Nor when the tumours themselves are examined after death, when the malignancy of many of them is recognized, and their firm, almost indivisible adhesions, and their immovable masses of new and morbid substance are brought to view; it is next to impossible to entertain any sanguine hope, that our means of diagnosis can ever be much improved. (pp. 647-9.)

A brief notice of the more important diseases of the external organs occupies the last thirty pages of the book. Into them, however, we have not space to enter, but must here part company with Dr. Ashwell, with the hope that he will not delay in giving to the profession the results of his experience in the diseases of the pregnant and puerperal states.

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## Art. III.

*Verhandlungen der K. K. Gesellschaft der Aerzte zu Wien.—Wien*, 1842-3.
*Transactions of the Imperial Medical Association of Vienna.—Vienna*, 1842-3. Vols. I and II. 8vo, pp. 509, 322.

The first of these volumes contains a selection of the papers read to the Society from its institution in 1838 to the close of the year 1841.

A short preliminary sketch of the rise and progress of the association is given at the commencement of the volume by Dr. Knolz. From this, we learn, that it originated, as many similar institutions have done, on occasion of the Austrian capital being threatened by the ravages of the cholera, but that it was not finally organized till the year 1838. The association was then divided into four different sections, of which each member might select one, or more, as his peculiar province:

I. Chemistry, Natural Philosophy, and Natural History.

II. Anatomy, Physiology, Psychology, and Comparative Anatomy.

III. Theoretical and Practical Medicine, Legal Medicine, Pathological Anatomy, and the Veterinary art.

IV. Theoretical and Practical Surgery, Ophthalmology, and Midwifery.

Upon all these subjects, various essays have been brought before the society, and we are here presented with a selection of those which have been considered most worthy of publication.

We observe in the short programme given of the order of business at each meeting of the society, that one point is especially attended to, which might be imitated, we think with profit, in the medical associations of this country. It is enacted that, in the second meeting of every month, a full history of the weather and of the prevailing diseases (Witterung's and Krankheit's Constitution) of the preceding month, shall be presented to the association by the secretary, and the aid of all the members is requested towards the completion of this desirable object.

Ninety pages are next occupied by a condensed history of the meetings of the society during the first session of 1838-9. From this brief notice we learn, that almost every important discovery of the year was brought under the notice of the members, while many points of investigation were suggested, which we subsequently find to have been followed out more completely, and to which perhaps we owe some of the original essays in this volume.

### SECT. I. PHYSIOLOGY.

In this department we find little that is novel; indeed we are surprised to meet with only one paper, on a subject so congenial to the patient spirit of investigation of our German brethren. Nor is the essay of Professor Czermak distinguished by any peculiar originality, and we should pass it over in silence were it not for one or two observations and theories, which if not absolutely new are yet worthy of being put upon record.

*On the rotatory movements in the cells of plants.* This is the subject of Professor Czermak's paper. The fact was first observed, we believe, by Costi in 1772, and has since been studied more deeply by Meyer and Dutrochet. After describing the well known circulation (?) in the cells of the chara and vallisneria spinalis, Professor Czermak favours us with his own theory as to the cause of these mysterious movements. They are entirely dependent, he says, upon the evaporation of the sap itself, for the motion of the chlorophylle globules is accelerated by heat, and is diminished when the temperature is lowered. The experiments, 15 in number upon which he bases this assertion, are certainly very favorable to this theory, but he allows at the same time that the walls of the cells themselves, must by their contractile power, exercise a considerable influence upon the movements of the globules.

### SECT. II. GENERAL PATHOLOGY.

The essays in this department are more numerous and important. The first three papers are by the same author.

I. *On the influence of theory upon medicine*, by Professor Töltenyi. The author first discusses the effect of the study of comparative anatomy and physiology upon medicine. He bewails, as all must ever do, the confusion and the opposing theories which prevail in the medical schools, and gives a lively and amusing sketch of the opinions which at present agitate the pathological world. He combats with spirit and wit the theory of Carus, Oken, and others, that the diseases of mankind are merely a revival or regeneration of the dormant forms of animal and lower life in our organization. That the fetus is to be considered as little if anything more than a mere animal he denies, and seems deeply shocked at the idea, that we should thus be compelled to ascend gradually in the scale of organization, till we become perfect beings. "Were this the case," he says, "the form first assumed should be that of the lowest degree of animal life, and we ought necessarily to pass through *all* the numerous higher stages of organized beings, before we arrive at the perfect man. Thousands and thousands of animal forms thus would come to be the receptacle of the future reasoning creature." We acknowledge that this picture of Professor Töltenyi's is somewhat overdrawn; he has, in his zeal to stem the tide of what he deems dangerous innovation, drawn largely upon the stores of his own creative mind. That great faults and mistakes have been committed by those who have advocated these theories, we readily admit, but that all, including Meckel's beautiful doctrine of *obstructed organization*, are erroneous and futile, we must utterly deny.

II. From comparative physiology our author next leads us to the consideration of comparative pathology. According to the theorists whom he combats, the former study having laid bare, in a manner, the secrets of creation, we are now called upon to admit that the state and condition which we are accustomed to term disease is in fact neither more nor less than a partial development of the animal life, which exists, though latent, in the human organization, at the expense of the higher development which we term *man*. If, then, we believe disease to be merely life existing within life—if it is merely the lower organization predominating and increasing, at the expense of the more perfect development, it follows necessarily that man can never be *completely* the subject of disease till the moment of death; and that, till that fatal hour, the higher life within him is healthy, and the lower alone diseased. How this doctrine holds in reference to fevers, cachexias, &c. is not sought to be explained.

The contradictions and ridiculous assertions of this German school of ideal pathologists (if we may adopt that expressive term), are admirably described; and with a short extract regarding these we will close our notice of this essay:

> "While on the one hand disease is compared to animal life in the lowest scale of existence, on the other, certain writers have associated it with the organization of the highest animals, which, in many cases, exceeds that of man himself. Thus, inflammatory fevers have been compared to the natural condition of the carnivora. Thus, because adhesions normally exist between the pericardium and the heart in fishes and in the amphibia, such adhesions, when they occur in man as the result of disease, are forthwith referred to the condition of the above-mentioned lower animals, and hence arises the curious contradiction, that inflammatory fever belongs to the normal state of the carnivora, whilst its product, the adhesion of the pericardium, sinks us far down in the scale of organization, and levels us with the inhabitants of the waters."

Professor Töltenyi's essay, if somewhat partial in its views, may at least be useful in curbing the exuberant imagination of our German brethren. In England we seldom allow our cooler fancies to carry us so far; but, from the increased intercourse with the continent, we cannot doubt that many strange theories will from time to time be transplanted to our soil.

III. *On the influence of pathological anatomy on medicine*, by Professor Töltenyi. While the Professor allows the great benefit we have derived from the researches of Meckel, Baillie, and the French pathologists, he deprecates the zeal of those enthusiasts who, forgetting the careful observation of disease during life, seek only for its manifestations in the body after death, and thus labour to place the study of pathological anatomy on too elevated a position, and to render it the sole aim and end of our endeavours. He laments, too, and we think with justice, the incomplete arrangement of our pathological museums, where often short and imperfect histories of the previous malady are attached to the most remarkable specimens; and observes that preparations of a certain kind are all indiscriminately crowded together, without reference to the diseases which produced them. We acknowledge that this latter mode of arrangement would be somewhat difficult in the execution; but an attempt at it would serve to draw away the attention of the student from the wonders and curiosities of pathology, which but too often are the sole object of his studies, to the morbid processes which produced them; and would remind him that it is the history of disease in the living body, and not the mere alterations it has left behind it in death, which must form the basis of his professional skill. We believe, however, that these remarks will apply more to Germany and France than to our own country.

IV. *Dr. Gruby's microscopico-pathological investigations* have already appeared in several of the journals of this country. As the present essay seems to have been written previous to the publication of his Latin work, we shall not weary the attention of our readers with a repetition of what has been already before them; and we do this with the less hesitation, as the paper before us contains nothing which is not to be found in the larger publication.

V. *On the matter of contagion*, by Professor Berres. Contagion, according to Prof. Berres, may consist of either dry or moist matter: the former may be in the shape of scales, scurf, or abrasions of the epidermis; and the latter a fluid, contained in vesicles or pustules; and, finally, contagion may be propagated by any secretion or excretion from the surface of the body.

The essence of *dry* contagion exists in an aggregation of semitransparent grayish white globules, about $\frac{1}{10000}$ of a Vienna inch in diameter. These globules swell somewhat in water, but exhibit no further internal structure. In the moist form of contagious matter, we observe a vesicle filled with a clear fluid, which exhibits no traces of organization; but should it become in the slightest degree discoloured, then a number of grayish white, round molecules appear in the fluid. These are about $\frac{2}{10000}$ of an inch in diameter, and contain a small cavity, apparently filled with a delicate vapour. But should the contents of the vesicle or pustule become more turbid, then the large spherical pus-globules become visible.

It is well known that certain fluids are at one time contagious and at another totally inefficient; and the microscope has hitherto signally failed in discovering the cause of this remarkable variety of effect. From the result of his observations, Professor Berres contends that all fixed contagions are, at their origin, alike in form, and that they consist of larger or smaller globules, which, in the moist variety, are surrounded by a clear fluid; moreover, that we have no data to explain the extreme variety in the effects and operations of contagion; and, lastly, that we must allow of a specific life and separate existence to *contagion*, which combines itself with the globules above referred to, and employs them as the means of transport of its hidden power.

Professor Berres conceives contagion to be propagated in two different ways, the material and the dynamic or vital. In considering the first-named mode, our attention should be directed to the anatomical constituents of contagion, as before described, and also to the surface of the human body, as its destined recipient. Professor Berres denies, or at least strongly doubts, the possibility of dry contagious matter acting through the epidermis; and even in the moist form, it would require a large quantity for the necessary endosmose:

> "We must, then, allow," he says, "that it is not the materies of contagion, but its specific life or vitality, which constitutes disease; and infection is then a dynamico-vital process, which takes place between living contagious matter, and the individuals predisposed to receive it. If this be true (?), it follows that contagion in all respects resembles the process of fecundation; where it is not the semen itself, but the aura seminalis, which operates on the germinal vesicle."

Continuing this train of reasoning, the Professor promulgates a still more curious theory, viz. that the reciprocal operations of the contagion, and of the recipient, closely resemble the office of the semen of the male and of the germinal vesicle of the female in the process of generation.

After giving at considerable length a description of the minute structure of the skin, Professor Berres proceeds to discuss the validity of Bulard's assertion, that the oriental plague is a disease arising from absorption of the poison by the lymphatics. This Professor Berres denies, and he doubts whether, in the majority of cases, either the veins or the lymphatics, are the bearers of the contagion, but he again asserts that in the plague, as in most other diseases, infection is to be considered as a dynamico-vital process, similar to the supposed one of the aura seminalis.

We cannot venture to assert that the difficult question of contagion has received much illustration from the essay of Professor Berres. His histological descriptions are indeed excellent; but, like the rest of his countrymen, he is apt to wander beyond them into a maze of theory, which greatly detracts from the acknowledged value of his microscopical observations.

VI. *On pathological chemistry*, by Dr. J. F. Hellers. This exhortation to the study of pathological chemistry contains an exposition of the author's views upon the causes of disease: it will interest particularly the rising generation of medical men, at least that portion who regard the human body as one vast chemical laboratory. Dr. Hellers traces, in a brief sketch, the rise of chemistry from the alchemist, through the study of the constituents of the mineral and vegetable world, up to its present high development in the study of the chemistry of the human body (anthropochemie), which he again subdivides into the physiological and pathological branches.

Dr. Hellers then gives his own opinions regarding the origin of disease, which, however, he very candidly assures us, are only to be regarded in the light of an attempt at laying down some fixed principles of pathological chemistry, and that his assertions and theories here expressed are only an approach to, or an attempt to arrive at, the truth.

Disease may arise in the human body:

1. From too high a state of oxidation of certain substances during respiration and circulation.

2. From the excessive diminution of the supply of oxygen, as is shown by the state of the blood in scurvy, chlorosis, cholera, &c.

3. By preponderance of the electro-positive or of the electro-negative condition; the former causing to predominate the *alkaline*, the latter the acid character in disease, as we see exemplified in the varying conditions of the urine and other secretions.

4. By abnormal aggregation of certain portions of our organism, as by an increased secretion of fluid in dropsy, diabetes, &c., or by a diminution, on the other hand, of the same fluids, causing deposits in various organs.

Dr. Hellers concludes by earnestly calling upon the profession to aid him in his endeavours to fix the principles of pathological chemistry on a sure basis, which can only be accomplished by the united labour and observation of the whole medical world.

### SECT. III. HISTORY OF EPIDEMICS.

This section comprises the history of disease and the epidemic constitution of the years 1838-39-40. It must be acknowledged that, in the accuracy and perfection of statistical details, we are considerably surpassed by our German brethren. The regular statistical accounts that are published in the continental journals, embracing the whole history of the ravages of disease during the preceding three months, half year, or year, are seldom imitated in England. We believe that the disunited state of the medical profession in this country, perhaps renders it difficult to accumulate the requisite data; but in our dispensaries and larger hospitals there is good opportunity for so doing, were our attention once properly directed to the subject.

I, II. The first two papers of this section relate entirely to the sanitary condition of the Austrian capital, and from the nature of the subject it is not possible to give an analysis of their contents. No epidemics of any serious importance have occurred during the period embraced by the report.

III. *On the means of forwarding the practical study of epidemic disorders*, by Dr. H. H. Beer. The incomplete acquaintance we as yet possess of the true nature of epidemics has given rise to endless theories, and to the most bitterly contested discussions among medical men. To render the history of epidemic disease practically useful for sanitary purposes, Dr. Beer proposes, 1, that all the medical profession should unite to furnish good comparative histories of epidemics; and, 2, that there should be a constant renewal and revision of approved medical topographies, with a full account of the genius *epizooticus*, as well as of the prevalence of blight or other disease among plants, at the same time. By these means, steadily pursued, Dr. Beer thinks that, after years perhaps of patient perseverance, we may become thoroughly acquainted with the history and true nature of epidemic disease.

IV. This is a short notice of Dr. Bulard's attempt to ameliorate our sanitary regulations regarding the plague. Professor Wirer, the author, thinks that three or four days of quarantine are quite sufficient for travellers, but that more perhaps should be required for certain varieties of merchandise. The great prevalence of plague in Turkey he ascribes to deficient drianage of the soil, and to the generally neglected state of agriculture. Until these obstacles are removed, the plague will continue its ravages in these countries.

V. This is upon a similar subject, and from the pen of Dr. Knolz. Dr. Knolz claims, for Austria, the merit of having first established regular quarantine, and also for having been the first to diminish its duration from forty-two to twenty days. The chief object of Dr. Knolz's essay is to examine the propositions of Dr. Bulard, that important alterations should be made in the sanitary laws.

The plague in Egypt is supposed to arise from an accumulation of causes, all tending to the development of the disease. The exhalations from the marshes, the rising temperature of the spring, the imperfect mode of interment of the dead, and the misery and uncleanliness of the natives, all concur, according to Malfalti, to induce the most fatal epidemics among cattle, which are almost always observed to precede the outbreak of the plague among the inhabitants of the Delta. It is uncertain whether these malignant disorders are transmitted from the lower animals to man, or whether the plague is to be traced as originating in the Dan el Maja, of the Delta, which is a most malignant form of intermittent fever, often proving fatal at once, or in a second paroxysm with delirium and intense headache. Petechial typhus soon makes its appearance and is accompanied by carbuncles and the buboes of the plague; and thus the author believes the transition is probably accomplished, from simple marsh fever to the most complete oriental plague. It is then exceedingly difficult to distinguish endemic cases of plague from those propagated by contagion; and indeed as soon as the real cases of plague make their appearance, each house wherein they occur becomes a fresh focus of infection. Dr. Knolz considers Dr. Bulard to be in error in the following particulars: 1, that he denies the plague to be a purely contagious disease; 2, that he considers all the hitherto-adopted modes of treatment as totally insufficient; and, 3, that he denies altogether the great use of a free current of atmospheric air as a disinfecting agent. But as we have already stated our views at length on the whole question of the plague and quarantine, we need not accompany our author further in his criticism.

VI. *On the epidemic of abdominal typhus in Vienna, during the months of July and August* 1838, by Dr. Dobler. This epidemic was mild in character, and strictly confined to two districts in the suburbs of the Austrian capital. It does not appear to have been contagious. The majority of those affected were from twelve to thirty-five years of age; but neither children nor the aged entirely escaped. Violent cases with head symptoms, were rare; but some patients sank rapidly after five or six days' indisposition. The symptoms, as detailed, were those of the typhoid fever of Paris. In some instances, the strongly-marked evening exacerbations and remissions, exhibited completely the type of intermittent fever. Two individuals lost upwards of seven pounds of blood by hemorrhage from the bowels; but they both recovered, after a tedious convalescence. Relapses were very frequent, and greatly increased the danger. The mortality was small, as compared to the number of cases, nor were the sequelæ of the malady of great importance.

Dr. Dobler ascribes the epidemic in a great measure to the high temperature of the spring of 1838; and also chiefly to the exhalations from a sewer or small brook which traverses the suburb of St. Ulrich and Spittlberg, to which municipal districts the fever was confined. No beneficial results were obtained by antiphlogistic treatment, and bleeding was especially injurious. The only remedy that proved really efficacious—and *this in all cases*—was crude alum, given in the form of powder, and in doses of from two to five grains every hour. Under every train of symptoms—diarrhea, delirium, debility—the alum proved equally beneficial.

VII. *Remarks on the epidemic appearances in the summer of* 1838, by Dr. C. Sterz. Dr. Sterz fully corroborates the statement of Dr. Dobler as to the beneficial effects of crude alum in the abdominal form of typhus fever. It was especially valuable in checking the exhausting diarrhea, and apparently acted as an astringent and tonic upon the relaxed and ulcerated mucous follicles of the intestines. The muriate of iron, which by some has been vaunted as a specific in typhoid fever, was, in Dr. Sterz's hands, inert, exerting no influence on the secretions of the bowels, save that of blackening the fæces.

As a remarkable instance of severe secondary disorder after fever, Dr. Sterz relates the history of a case of noma, accompanied by extensive necrosis of the bones of the face. The child, a boy of 10 years old, recovered at last, but with the loss of almost the entire superior maxilla on the left side, leaving a hideous gap, only partially covered by the cicatrix of the ulcerated cheek.

VIII. *On the epidemic of abdominal typhus, as observed in the wards of the General Hospital of Vienna, in* 1838, by Dr. C. Folwarczny. This consists chiefly of a statistical account of the cases; from which we find that, out of 115 patients—55 of whom were males and 60 females—there occurred 30 deaths; 13 males, 17 females. The treatment, in all severe cases, and whenever there was diarrhea, was solely by crude alum, but the milder forms yielded to an infusion of ipecacuanha and acid drinks. Typhoid ulcerations, so admirably described by Rokitanski, were found invariably in the ileum.

IX. *Observations on the epidemic fever of the year* 1839, by Dr. Wirer. This appears scarcely to have deserved the name of an epidemic, and to have been remarkable only from the frequent occurrence of miliary eruption on the body during its course. The treatment adopted was chiefly emollient, with cooling lotions to allay the heat of the skin. Alum is not mentioned as being employed.

## SECT. IV. SPECIAL PATHOLOGY AND PATHOLOGICAL ANATOMY.

I. *On the bite of venomous serpents*, by Professor J. J. Czermak. Dr. Czermak's experiments were made with vipers (vipera rhedi,) from Dalmatia. He found that the amphibia, probably from their slow and less perfect circulation, resisted the action of the poison longer than the mammalia, and much longer than birds. The poison he believes to act entirely through the blood, disorganizing that fluid, and rendering it incapable of coagulation.

II. *On endocarditis, with reference to a case of inflammation of the semilunar valves of the pulmonary artery.* The foramen ovale was also open in this case; and the lesion of the valves of the pulmonary arteries was greater than in any instance we have heard of.

III. *A case of complete ossification of the semilunar valves of the aorta.* This does not contain anything of peculiar interest.

IV. *On the eye as regards diagnosis*, by Dr. J. F Frank. Few will deny that the dependence of the ancient physicians on the signs afforded by this organ in disease were more or less founded on careful observation. Dr. Frank, from the results of forty years' experience, fully corroborates this Hippocratean doctrine, which has no doubt fallen into neglect in our days, from other and more certain signs of disease having become known. The mere dryness, filminess, or bright glassy appearance of the cornea and sclerotic may, we think, often result from very opposite conditions of the body, and cannot indicate with certainty any peculiar disease. In connexion with the general aspect of the countenance, we readily allow to the eye all its influence, but singly it is a sign of little value.

### SECT. V. PHARMACOLOGY AND THERAPEUTICS.

I. *On electricity as a remedial agent*, by Professor Wisgrill. After referring to the great vogue electricity enjoyed in medicine at the beginning of the present century, and to the subsequent contempt into which this remedy fell, Dr. W. asserts that its neglect arose, less from the inefficacy of the means, than from the mode in which they were employed. A revolution in favour of this powerful agent has now, he says, taken place, and this has especially been aided by the discovery of magneto-electricity. The employment of electricity in medicine has not hitherto, according to Dr. Wisgrill, been based upon scientific principles. By the profession in general, the study of natural philosophy has been regarded merely as preparatory, and has not been directed with reference to the practical part of medicine. Moreover the apparatus hitherto used has been costly and difficult of application, while, at the same time, it was essentially incomplete. We may observe, however, that the rotatory apparatus of *Kail*, which was used by Dr. Wisgrill, is inferior to that now generally employed in England. During the years 1837 and 1838, Dr. Wisgrill had treated twenty-one cases by magneto-electricity. We cannot attempt more here than to give the results obtained. In four cases of *hemiplegia* (two of which were complete,) great and decided benefit was obtained, by daily applications of the machine. In one case of *hysteric clavus*, the evil was arrested for ten months, and then having returned for twenty-four hours, was again finally put a stop to without difficulty. The remedy is of little or no avail in *toothache*, as we ourselves can testify; but in four cases of *infra-orbital neuralgia* its effects were truly surprising. One of these cases had continued for twenty-five years, and latterly without intermission. During five months the application of magneto-electricity was persevered in, at first once a day, and for a short period and subsequently twice a day, for a full hour each time. The result was, that the pain ceased almost entirely for six weeks, and during the succeeding five months it recurred but four times for the space of ten days on each occasion, and generally in consequence, as Professor Wisgrill believes, of atmospheric changes.

II. This is an essay on the same subject, by Professor Wirer. The author speaks still more confidently than his colleague, as to the beneficial effects of magneto-electricity in paralysis of long standing. Professor Wirer further states, that in all cases where a beneficial effect has been produced by this remedy, a degree of febrile action is set up in the system, which he compares to that observed when salivation ensues from the use of mercury or of the preparations of gold. In the cases of paralysis to which he refers, this peculiar febrile action always preceded the beneficial operation of the remedy.

III. *On the employment of fat as a therapeutic agent*, by Professor Wirer. This article is merely a strong recommendation to its further use in disease, and especially in those complaints in which it has been successfully employed. The author refers to the investigations of Liebig and Rettenbacher regarding the physiological use of fat in the human body, and concludes by expressing his earnest desire that more attention may be paid to this department of therapeutics. "Has not," he asks, "every species of fat its own peculiar properties and action on the human body? and is it not desirable, that many now obsolete remedies, consisting entirely of various animal fats, should be again received into the 'materia medica?,"

## SECT. VI. MIDWIFERY.

I. *History of a case of triplets*, by Dr. Bartsch. Both the mother and children did well, though placed in great danger, from threatened convulsions preceding the birth of the first child, from the transverse position of the second, and from hemorrhage during the birth of the third infant. The woman was 38 years of age, and had previously borne nine children. She had twins three years before the triplets appeared.

II. *On the influence of the imagination of the mother upon the fetus in utero*, by Dr. Ernest Freiherr v. Feuchtersleben. Dr. von F. states that the existence of such an influence was never questioned until the commencement of the eighteenth century, but that when once doubted of, it was speedily denied, and that which before was regarded as an undoubted fact, now became a fable unworthy of our science. But within the last twenty or thirty years the spirit of calm philosophical inquiry has forced us to admit that many instances strongly in favour of the existence of such an influence are now upon record, and the question to be solved is rather, how could such things be produced if such influence be denied? The opponents of the theory believe that they may occur from long continued pressure upon the uterus during pregnancy; from an injurious position of the fetus in utero, arresting the normal development of this or that portion of the body; from disease of the fetus itself; from an amalgamation of one or more of the parts of one or more fetuses with another, &c. The author, without avowing his own creed upon the subject, believes that this question can never be definitely settled without a more perfect knowledge of those causes which influence the arrest of development in the fetus, and especially as to the period, if any, in fetal life, at which this influence ceases to exist.

## SECT. VII. SURGERY.

I. *Results of lithotrity, and of attempts to dissolve urinary calculi in the bladder*, by Dr. Graf. Dr. Graf has only employed lithotrity five times, in four of which he was successful. Dr. Graf announces that he has discovered a means of dissolving urinary calculi in the bladder. Dr. Graf states that he became acquainted with this remedy by chance, and that sooner or later he will make it public. It was peculiarly powerful upon phosphatic calculi. Is not all this very redolent of quackery? How came the Society to tolerate it?

II. *Report of the Orthopedic Institution at Vienna*. By Dr. August Zink. In every large town such establishments are now being formed:

that of Vienna was founded in 1838, and the present report embraces the first two years of its existence. The majority of the patients were females, and 56 out of 119 were affected with contorted spine; 14 suffered from contraction or deformity of one or more limbs; 16 exhibited a decided tendency to chlorosis or to scrofula; 5 had hemiplegia, or general muscular debility; and 28 entered the Institution to invigorate their weakly constitutions, or for the purpose of increasing their stunted growth. The proportion of females affected with spinal contortion was, to that of males, as 22 to 1. Dr. Zink appears to have bestowed much attention to that one form of spinal contortion which has been termed the sigmoid flexure of the column. It generally commences from the 5th to the 8th year of childhood, between the third and fifth dorsal vertebræ, and the deviation is almost invariably towards the right shoulder-blade. On careful examination at this period we discover that the right shoulder exhibits an excess of nutrition over the left, and this is apparent even in the bones, and especially in the right shoulder-blade. In consequence of this, such children exhibit a remarkable tendency, in spite of all admonitions to the contrary, to lean towards the weaker side, and this even during sleep, while on every occasion requiring muscular exertion they prefer the stronger hand.

> "From repeated observations," says Dr. Zink, "I am convinced that the greater part of the mischief here detailed is effected during sleep, and consequently is in operation during one third of the patient's daily existence. The head then leans down towards the left side, and the lung on that side is compressed, one lung only (the right,) performs its full office, and the muscles of respiration on that side are in a state of activity greatly exceeding that of the left. . . . . I have also ascertained that the convexity of the deviation of the spine accords exactly with the insertion of those muscles which are most active in the process of respiration. This deviation from the perpendicular, so high up in the spinal column, is often overlooked, and the inferior and secondary contortion to the left side in the lumbar vertebræ is often regarded as the primary affection."

This form of scoliosis occurs chiefly among the children of the wealthy, and is much more frequent among females than males. It is curable as long as the vertebræ can be brought back to their natural position. Dr. Zink lays much stress upon the necessity of attending to the position of the body during sleep, and he believes that many attempts to cure are unsuccessful from the injurious posture being resumed during the period of repose. The watching of the patients during sleep, as may well be imagined, has been the most tedious and costly portion of the cure. During the day the ordinary gymnastic exercises were employed, taking care that the weaker side especially should be kept in constant action. Dr. Zink believes that he has obtained much benefit also from frequent singing, which dilates the whole chest equally. Many girls entered the Institution on account of chlorosis, or a tendency to that disease. It was remarked, that if the menstrual secretion had already commenced in these patients, it was almost always suppressed during the period of their stay, and this without the slightest drawback to their daily improving health.

III. *On tenotomy as an orthopedic means*, by Dr. Zink. In this brief notice Dr. Zink praises highly the subcutaneous method, and states that he has in several cases, and with success divided the muscles of the spine from their attachments, and thereby effected the cure of several almost hopeless cases of scoliosis.

IV. *Experiments with vaccine lymph, obtained from Dr. Reiter of Munich*, by August Zöhrer, surgeon to the Imperial Foundling Hospital in Vienna. The only point worthy of notice here is the observation of Dr. Zöhrer, that the most certain and complete indication of true lymph having been employed is, that the vaccine vesicle carries off in its scab, both the dermis and the bulb of the hair, and leaves the cicatrix of a reticular form, with many deeper small points or holes. The lymph here employed had been obtained from the cow by Dr. Reiter of Munich, and had been once transmitted through the human body before it was used by Dr. Zöhrer.

### SECTION VIII. ON MINERAL WATERS.

I. *On the employment of the Carlsbad waters*, by Dr. Sterz. Dr. S. warns his brethren against the indiscriminate use of these waters, and especially of the Sprudel spring, which he asserts usually tends to increase abdominal congestion, instead of dissipating it, as generally believed. It has long been known that the waters of Carlsbad are contraindicated in all acute diseases, and Dr. Sterz now denies the use of the Sprudel spring to cases of abdominal and venous congestion. He concludes his short essay with the history of two cases which certainly would go far to establish his opinion in this respect.

II. *On the good effects of the Carlsbad waters in cases of diabetes mellitus and insipidus*, by Dr. Hochberger.

III. *Elephantiasis cured by the Carlsbad waters.* These are certainly to all appearance well authenticated instances of recovery from the disorders named under the use of the Carlsbad springs ; but the history does not present any points of peculiar interest.

IV. *On the good effects in disease of the whey, the water, and of the atmosphere of Ischil*, by Dr. von Wirer. This is certainly somewhat of a quaint title, but Dr. von Wirer is honest enough to allow that his patients, most of them the victims of the dissipation of the Austrian capital, during the preceding winter, are as much benefited by pure air and exercise, as by the whey which they swallow in such considerable quantities.

The first fifty pages of the second volume contain an abstract of the Society's proceedings during the session of 1841-42, the fourth year of its existence. It is evident that the increasing years of the Institution have not chilled the fire of scientific investigation, and that delightful harmony, so conspicuous in the reunions of our German brethren, appears to have been uninterrupted.

I. *On the value of systems in medicine*, by Dr. Knolz. After a long preamble on the tendencies of medical science during the last two thousand years, Dr. Knolz discloses to us that in the eighteenth century the doctrines of Hippocrates were on the point of becoming permanently triumphant, when their victorious course was arrested by the schools of Brown and of Hahnemann.

> "The Scottish physician denied to pathology the participation of the humours of the body in disease, and he contracted within the narrow limits of asthenia and

hypersthenia all that host of maladies which had been so learnedly arranged and described by Sauvages, while even his simplifications of our own science were in their turn overthrown by Hahnemann. True inflammatory disorders were to these men nosological rarities; they denied the existence of hereditary disease; they passed over in silence the numerous host of local disorders; and, finally, repudiated the noble Hippocratean doctrine of crises in disease, and of the vis medicatrix naturæ While the Scottish innovator confined his practice to wine and opium, the German Homœopathist swept away at once the sciences auxiliary to medicine, and reduced the practitioner to the bare observation and arrangement of symptoms, while at the same time he extended the operation of drugs far beyond the bounds of possibility."

Dr. Knolz gives a fearful picture of the devastations caused by Brown's doctrines on the continent of Europe, and especially in Italy, while he acknowledges that in England they found small favour from the beginning. But the doctrines of Hahnemann cannot in this respect be compared to those of Brown, for the former have never gained ground in the schools, nor have they been adopted by a single eminent man. The system of Brown, according to Dr. Knolz, would not have declined so rapidly, had not a more worthy opponent entered the field; and the doctrines of asthenia vanished before the study of natural philosophy and of its various branches. The author concludes by earnestly recommending the Hippocratean doctrines of experience and science combined, as the only sure basis of study; and reminds us that if in ancient times medicine was a *divine art*, it is in modern days the highest of the sciences.

II. *On the object and the organization of medical societies*, by Dr. Sporer. This is a mere exhortation to form medical societies for the investigation of disease. Rules are laid down for their due government and efficiency, which could scarcely be adopted here.

### SECT. II. HISTORY AND GEOGRAPHY OF DISEASE.

It is in statistical information, of the kind contained in this section, that our continental brethren so much excel us in England.

I. *On the characters of disease in Vienna during the year* 1841, by Dr. F. v. Feuchtersleben. Though extremely useful in his own locality, still this essay does not present any points to interest the British reader. There are, moreover, in the paper various expressions which puzzle us not a little, such, for instance, as the term "*lateral character of disease.*" Vienna does not appear during this period to have been visited by any epidemic, and the usual disorders of this great capital exhibited no tendency to increased virulence. Of inflammatory disorders pneumonia appears to have been exceedingly frequent.

II. *On cretinism*, by Dr. Knolz. This is a valuable paper, by one who has enjoyed every opportunity of studying this difficult disease. Dr. Knolz briefly reviews the opinions of previous writers, and observes that they all carefully avoid answering, in a direct manner, the question that at once suggests itself, *what is cretinism?* The definition of the malady, as given by Akerman, by the Wenzels, and by Foderée, and others, he regards as erroneous. The characteristics they describe are by no means constant. Thus they speak of the complexion as being always of a leaden hue, and the thyroid gland as being always very much enlarged; while, in very many instances, perfect cretins are seen with the usual bronzed healthy look of the mountaineer, and whose thyroid gland does not in the least exceed its normal dimensions. Dr. Knolz has been enabled, by a ten years' residence among the cretins around Salzburg, in the Tyrol, to give the following description of the malady.

The entire body of the cretin bears the marks of insufficient or irregular development. The average stature is far below that of the Caucasian race; the head is small in proportion to the size of the body, and, from its peculiar form, resembles rather that of the lower animals than of the perfect human being; as the lower portion of the face, containing the organs for the reception of food, are infinitely more developed than those allotted to the senses. The facial angle usually approaches more nearly to that of the orang outang than to that of man. The occiput is generally flat, and the back part of the skull runs parallel with the spine, as in ruminating animals. The occipital foramen, probably from deficiency of the cerebellum, lies very far back in the skull; and this, no doubt, is the cause of the head falling so far forward upon the chest. The face is usually broad and short, as are also all those features which give to the countenance its intellectual character. The eyes are sunk in the head, and widely separated; the eyelids heavy and overhanging; and the forehead retreating and low. The jaws are extremely prominent; the mouth wide, with thick sensual-looking lips, from which the saliva constantly flows over the scarcely perceptible chin. Dr. Knolz entirely denies that the dimensions of the thyroid gland afford any just measure of the amount of cretinism in individuals so affected. From the peculiar position of the spine, in relation to the thighs, the cretin's gait resembles not a little that of some of the monkey tribes when walking erect. Ipzhofen denies that the genital organs in cretins are unusually large; but Dr. Knolz confirms, in this respect, the statement of others, and asserts their excessive development to be a universal law.

With respect to the physiological qualities, the digestive organs of cretins greatly preponderate in activity over the others; the whole occupation, the whole life of the cretin is centered in the enjoyment of eating, though Dr. Knolz does not think, with the Wenzels, that their digestive powers are necessarily in proportion to their enormous appetites. The liver in cretins, as in the lowest class of animals, is of great relative size. They undoubtedly possess muscular irritability, and also the faculties of thought, and of will, but all in a very inferior degree. In the complete cretin, the power of speech is almost entirely, or is quite, extinct; nor does this result from deafness, for he is equally unable to learn the finger-language of the deaf and dumb.

The true characteristics of the cretin are then to be sought for in the head, both in the skull and in the face; and to these may be added, the undue development of the liver, and of the sexual organs. Fetal life in the cretin may be said never to be extinguished; he is never developed into the man, scarcely rising above the condition of the merest infant, save by the great activity of the digestive and sexual organs. In fact, they otherwise possess merely a vegetative life; and, were their appetites and power of locomotion taken away, they would be no more, observes Dr. Knolz, than warm-blooded plants. The disease of cretinism Dr. Knolz considers to arise from undue activity of the ganglionic or vegetative, with a deficiency of the cerebral, system; and not, as many have imagined, from any peculiar induration of the whole or of parts of the brain, or from rachitis, syphilis, &c.

On the whole, Dr. Knolz's essay is well deserving of an attentive perusal, and bears the marks of a mind bent upon the investigation of truth.

IV. *On the sanitary statistics of Steyermark* (*Styria*), by Dr. Onderka. We cannot praise this account of the wild mountainous regions south of the Danube: it is written in so fulsome a style, as involuntarily to remind us of the singular histories in the 'Miscellanea Curiosa,' or the still more remarkable works of this kind of the fifteenth and sixteenth centuries. Nor are we better pleased with the plan followed in this paper, where, one disease being named, all those localities are placed after it where it may have occurred during several years. Dr. Onderka should curtail his exuberance of language, and amplify his statistical information, if he would benefit his readers. The number of medical men in proportion to the population is as 1 to 2512, and in Gratz, the capital, as 1 to 616. The number of surgeons exceeds, by three times, that of the physicians; and they, as must ever be the case in thinly-populated districts, exercise in the mountains all the duties of the general practitioner in England.

### SECT. III. MATERIA MEDICA.

I. *On the administration of new chemical remedies*, by Dr. Netwald. This is a paper of mere local interest, and, in fact, is a sketch of the condition of the apothecaries in Vienna. It contains little that deserves our notice, save that we find a description of an institution in Vienna which must, we think, be even more efficacious than our Apothecaries' Hall in upholding the purity of drugs. A certain number of the apothecaries of the Austrian capital have associated themselves together, and founded a depôt or warehouse for medicines, and each member is bound to furnish certain chemical preparations and medicines to this central institution. All these, before they are admitted, are carefully tested by a committee of competent judges; and thus each member is certain that he receives, pure and unadulterated, those preparations which he may not have leisure or opportunity to make for himself.

II. *On the advantages of the infusion of arnica in paralysis of the bladder*, by Dr. Meyer. Dr. Meyer regrets that this plant should now be so much neglected in medicine, as to be in some parts of Germany merely a popular remedy. He relates, at very considerable length, a case where its employment was certainly attended with most beneficial results. The paralytic affection of the bladder, which was of two months' duration, disappeared after three days' use of the arnica infusion; and when it recurred, two months after, it was again cured, in the same space of time, and by the same remedy.

III. *On the advantages of steam-baths, and in particular of the "Sophien bad" at Vienna*, by Dr. Sterz, sen. The diseases most benefited by these baths are rheumatic pains without fever, gout, and its consequences, especially herpetic eruptions, and also ancient indurated glandular swellings, which soften and disappear. In diabetes, the determination to the skin occasioned by the steam-baths, was followed by the very best effects. We are not aware that steam-baths, on the large scale, as they are used on the continent, exist in this country. An attempt was made to introduce them into London some years since, by a gentleman from Vienna; but the attempt did not meet with the encouragement it deserved. It is a pity that, in this age and this country of steam, so powerful and so agreeable a means of acting on the system should not be adopted.

IV. In the next paper, on the same subject, Dr. Gotzy warns his professional brethren against the indiscriminate employment of steam-baths, especially in cases where active venous congestion is going on. Dr. Gotzy's essay is a long one, and develops amply the views of the Vienna school upon dyspepsia and congestive plethora, though we cannot say that it discloses any facts, new to the readers of this Journal.

### SECT. IV. SPECIAL PATHOLOGY.

I. *Explanation of a passage in Mercatus's work,* '*De Morbo Gallico,*' by Dr. Pasquali. The substance of this communication is, that Mercatus suspects the venereal poison to centre in the *liver*, and Dr. Pasquali relates three or four cases which would seem to him to corroborate this theory of the Portuguese physician! We do not deem it necessary to enter into further details, especially since the cases he relates are, as may be anticipated, by no means confirmatory, in our judgment, of Mercatus's views.

II. *History of a case of hydrophobia,* by Dr. J. Hassinger. The case is chiefly remarkable from the fact of the bite having been received two years before the appearance of the malady, constituting a third case of this kind within the last two or three years. The two others occurred in this country; and in all the cases, little or nothing was discovered on dissection.

III. *History of five individuals poisoned by arsenic, with remarks on the use of that poison by the mountaineers of Austria and Styria,* by Dr. A. Flechner. In April 1838, five individuals, residing close to some mines at Schögmühl, in Lower Austria, were attacked with symptoms of gastritis. The fever was slight, but there was much depression and debility. The author suspected the water of which these individuals drank to be the common cause, as they did not all eat together. He was confirmed in this supposition by the fact, that a large quantity of cobalt, containing arsenic, had lain close to the spring during the winter; and he suggested that a portion of the arsenious acid in the cobalt ore had been dissolved by the snow and rain, and had filtered through the earth into the spring. The hydrated peroxide of iron was judiciously employed as a remedy in all the five cases; and as the evil effects seem to have resulted from repeated small doses of the mineral poison, so in the same way a few grains of the above remedy were given at short intervals. The beneficial effects of the antidote were almost immediately felt, and in a few days the whole five individuals were restored to perfect health. The water of the spring on being tested in the usual way, exhibited abundant traces of arsenic.

Dr. Flechner then proceeds to give an account of the use of arsenic among the Styrian mountaineers. From the time of Mithridates, wonderful histories have been frequently related of individuals who had by degrees habituated themselves to the daily use of the most dangerous poisons. But Dr. Flechner is, we believe, the first who, from his own authority, informs us that arsenic is used as a popular tonic. It is taken by the hardy Tyrolese and Styrian hunters, in doses which would certainly be most injurious to the generality of mankind. Some swallow as much as two grains of the mineral before they set out on their dangerous excursions in the mountains; and all affirm that they acquire thereby a great increase of bodily vigour and a power of enduring fatigue which they could not otherwise obtain. We will own that Dr. Flechner's account of this Mithridatean practice of the Tyrolese is somewhat startling; and though written with apparent good faith, he does not seem to have himself witnessed the actual employment of the poison after this singular fashion. We are most anxious for further details.

IV. *History of two remarkable cases*, by Professor Wagner, of Lemberg. The latter of these is worthy of notice, as being of rare occurrence. The patient, a girl of 8 years old, and born of healthy parents, was observed at birth to have a small tumour on the right side of the nose, near its root. The tumour was then only the size of a hazel-nut, insensible to the touch, and covered with a skin similar to that of the neighbouring parts. Before the child was a year old the growth had increased to the size of a pigeon's egg, and had become dark coloured and tender. Eight years elapsed before medical aid was sought. The child then appeared healthy, and all the functions were perfectly normal. The tumour now extended from the inner canthus of the right eye over the cheek as far as the right ala nasi, and, passing across the mesial line, covered also a portion of the left side of the nose. It was seven inches in circumference at the base, two inches in diameter, and four inches in length; its consistence soft and pasty; and the colour brownish red, with several white cicatrices. The eyelids of the right eye were partially everted, and inflamed; while the bulb itself was thrust outwards towards the external canthus. The patient complained of a dull pain, extending upwards to the brain, when the tumour was much pressed or handled. The plan of treatment pursued was not such as would have been adopted in England. From the great apparent vascularity of the tumour, Dr. Wagner and his colleagues would not venture upon extirpation by the knife; but it was determined to carry shallow incisions over the surface, and then to excite suppuration and the destruction of the whole by strong corrosives. This was done; but the application of the solid nitrate of silver gave rise to severe symptoms of cerebral reaction, and to an erysipelatous inflammation of the cheeks. But the treatment was still persevered in for ten months and more, though, in spite of all their efforts, new growths were constantly put forth to supply the place of those that had been destroyed by the butter of antimony, and other caustic applications. About the beginning of April, ten months after the patient had first entered the hospital, a great increase of the constitutional symptoms took place, and masses resembling cerebral substance came away from the profusely suppurating surface. On the 10th of April the patient was seized with violent general convulsions, which soon ceased; but there remained a complete paralysis of the *left* side of the body. These convulsive attacks frequently returned, until the death of the patient on the 2d of May. The examination was commenced within five hours after dissolution, and the details are given at great length. The right anterior lobe of the brain was found to have constituted the tumour observed externally during life; a prolongation of its substance, to the extent of five inches in length and an inch and a half in diameter, passed out through the right orbital foramen into the face, having destroyed a portion of the frontal, the nasal, and ethmoid bones, to form a canal for its exit. The membranes of the brain exhibited a high state of inflammation.

The remaining five short essays, which terminate the volume, do not contain anything to interest our readers.

On the whole, we congratulate our Viennese brethren on these first-fruits of their labours; and we trust that every succeeding year will increase their numbers and value. We rejoice, too, to find how much the fond tendency to theorize, formerly so conspicuous in Germany, has been superseded by the spirit of patient investigation. It is true that the new sciences, as we may call them, of microscopical anatomy and physiological chemistry, have opened a fresh field for exuberant imaginations; but the sober earnestness of the work before us is a pledge that the Vienna school will go on in the line of patient observation and study; and we may reasonably hope that the ensuing volumes of these Transactions will equal if not exceed in value those of which we have here given an account.

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## ART. IV.

1. *Hygiène Militaire, à l'usage des Armées de Terre.* Par le CHEVALIER J. R. LOUIS DE KIRCKHOFF, &c. &c. 2de Edition.—*Anvers*, 1823. 1 vol. 8vo, pp. 250.
2. *Vade-mecum, ou Guide du Chirurgien Militaire.* Par le CHEVALIER SARLANDIERE, D.M. &c. &c.—*Paris*, 1823. 1 vol. pp. 362.
3. *Manuel portatif des Officiers de Santé des Hôpitaux et des Corps de Troupes.* Par A. DORAT.—*Paris*, 1834. 1 vol. 32mo.
4. *Manuel réglementaire à l'usage des Officiers de Santé des Hôpitaux Militaires et des Corps de troupes.* Par J. A. A. E. PUEL, D.M. &c. &c.—*Metz*, 1837. 1 vol. 8vo, pp. 508.
5. *Aide-memoire Medico-legal de l'Officier de Santé de l'Armée de Terre; publié avec autorisation du Ministre de la Guerre, et encouragé par le conseil de Santé des Armées.* Par F. C. MAILLOT, Professeur à l'hôpital militaire d'instruction de Metz; et J. A. A. E. PUEL, Médecin ordinaire, &c.—*Paris*, 1842. 1 vol. 8vo, pp. 644.
6. *Elements d'Hygiène Militaire.* Par D. PH. MUTEL, D.M. Chirurgien Major au 52e de ligne, &c. &c.—*Paris*, 1843. 1 vol. 8vo, pp. 392.
7. *On Military Hygiene, and particularly upon the Clothing of Soldiers.* By FREDERIC ROBERTS, Esq. Assistant Surgeon, 59th Regiment. *Reprinted from the Medical Gazette*, pp. 24.

A remarkable feature in the literature of the present day is the number of handbooks and guides to every kind of knowledge which are almost hourly ushered into existence. We have them of all descriptions, and relating to all manner of places, from Handbooks for India, which promises by and bye to be an agreeable tour for lawyers during the long vacation, to Guides for holiday parties to Hampton Court or Gravesend. In the fine arts we have them of all sizes, from Mrs. Jameson's excellent Guide to the Public Galleries, down to Punch's amusing one to the Chinese Exhibition; we have them on almost every conceivable object,—Cookery and Life Assurance, Swimming and the Toilet, Horsemanship and Swindling, *cum multis aliis.* In most instances the supply has doubtless been created by the demand, and it may be fairly assumed from their abundance, that the want of some such works has been generally felt and their utility appreciated. A system which has been found to take so well in matters of taste, of luxury, and of comfort might be extended with advantage to the everyday duties of life, and would greatly facilitate the acquirement of those details which, in every business and profession, though trifling in themselves, tend very materially to the comfort and efficiency of the individual. There is perhaps no class to whom such a work would be more useful than to medical officers upon their first appointment to commissions in the army and navy. They must have previously gone through a course of study, in every respect sufficiently extensive, and calculated to fit them for the discharge of their professional duties in civil life, and we are entitled to infer from the amount of clinical instruction demanded of them, that most if not all are *practically* acquainted with their profession. Yet the duties they are called on to perform in the army and navy are in many respects widely different from those of a clerk in a civil infirmary, or a pupil in a dispensary. Their social position also is so altered from that they have left, whether they have been domesticated with their families or have prosecuted their studies away from home, and been already thrown on their own resources among strangers, that a work of this nature, if judiciously executed, could not fail to prove highly useful. We believe there are few medical officers who, on looking back to the early part of their career, will not agree with the following sentiments of Sarlandière: "When I joined the army, rich in professional knowledge, but very inexperienced in all that concerned the soldier, how often would a guide book have saved me from the mistakes and ignorance very natural to a man unaccustomed to live among soldiers! and how much better could I have given that information which my chiefs had a right to expect from me!" This, as well as many of the observations contained in the following pages, is equally applicable to the medical officers of the navy. In the present article, however, as the books before us all relate especially to the army, we shall keep mainly in view that department of the public service.

At present, persons who are about to be recommended for appointments in the Army Medical Department are sent to the General Hospital at Fort Pitt, for the purpose of making themselves acquainted with their future duties, so far as they can be acquired in that establishment. They are detained there, living in lodgings at their own expense, without receiving pay, or sharing any of the privileges enjoyed by officers holding Her Majesty's commission, for a period varying from a few weeks to several months, according as vacancies chance to occur. Much benefit must doubtless be derived from the facilities afforded by the magnificent museum at Chatham, of tracing the effects of disease as it occurs in tropical climates, and from the frequent opportunities which present themselves for the study of pathological anatomy, particularly at those seasons when large batches of invalids arrive from foreign stations, too often in the last stage of disease, and in a condition which preclude the possibility of their being discharged, to spend the closing days of their existence among their friends. But these advantages might be very much increased, were the principal medical officer directed to deliver clinical lectures on the numerous interesting cases which must constantly present themselves, and to instruct the candidates and junior officers in the various duties required of them both in regiments and on the staff, with occasional examinations on these subjects. "It is not in the medical schools," says Kirckhoff, "that we can make good medical officers but in the military hospitals; it is only by practising in the midst of camps and armies, and by studying the physical and moral condition of the soldiers, that the medical officer can acquire the knowledge which his duties demand—duties very different from those of the physician and surgeon in civil life." The inspectors and deputy inspectors of the Royal Naval hospitals at Haslar and Plymouth deliver, during the summer months, a course of lectures to the medical officers serving in the ships of war in port, and in the hospitals. Were a similar arrangement adopted by the staff of the general hospitals at Chatham and Cork, and there is no reason why in the army it should be confined to the summer months, there cannot be the least doubt that it would be productive of great benefit. Young medical officers would thus be instructed in their duties, and in the principles of military hygiene by men who, from their standing in the service, would be well qualified for the task; for it must be obvious that no one can convey the requisite information on these vitally important subjects, but a medical officer of long and varied experience, one who from having lived among soldiers, is practically acquainted with their habits, and has served with them in the various climates, and under the diversified conditions incident to a military life. Habits of reading and thinking would be engendered among the officers from the very commencement of their career, and they would be thus induced to store their minds with useful information, and to take advantage of the opportunities afforded them of cultivating science, promoting the interests of the service, and applying to practical purposes the theoretical knowledge they had acquired in the schools.

In France the medical officers of the army are educated at the public expense, and the course of instruction is regulated strictly with a view to their ultimate destination. There are three schools for this purpose, namely, at Strasburg, Metz, and Lille, each connected with a large military hospital, and the professors are elected by *concours* from among the medical officers of the army. After having finished in one of these schools the prescribed course of medical education, including lectures on military hygiene, and having passed a rigid examination, the pupils are sent for a year to the "hôpital de perfectionnement," at Paris. Being thus trained from the very commencement of their studies, in military hospitals, and instructed by experienced medical officers, they attain a knowledge of the moral and physical condition and of the habits of soldiers, which enables them to benefit by the prelections delivered to them, and to become well versed in the various duties they may be afterwards called on to perform.

"Of all the branches of medicine," asks Revolat, "ought that to be the least known which relates particularly to the military profession?" We see no reason why it should be so; we fear, however, that the charge of negligence in this particular may be too truly applied to our own army in the present day. Although from their education, which throughout is a practical training for a military career, the medical officers of the French army would seem to require the assistance of guide books less than the British, yet they are much better supplied with them; indeed a good work of this nature is still a desideratum in our service. It may certainly well excite surprise considering the great care that has been taken in the admission of efficient medical officers into the army during a period of thirty years, that no complete treatise on military hygiene has yet made its appearance, and that so very few standard medical works have emanated from the officers of this department.

We have noted a few of the more recent French publications at the head of this article, but had we extended our investigations a little further back, and included works which from their size cannot be termed "hand-books," we should also have noticed Colombier's excellent 'Code de Médecine Militaire,' in five volumes; Hecker's 'Manuel de Médecine pratique Militaire;' 'Revolat's 'Nouvelle Hygiène Militaire,' in one volume, published in 1803; and the valuable article on that subject by Vaidy, in the 'Dictionnaire des Sciences Médicales.'

The 'Military Medical Guide Books' may be divided into two classes those relating to the position of the army medical officer and to his *military* duties, and those which treat of the means of preserving the health and promoting the efficiency of soldiers: the study of the first will conduce much to his own comfort, and materially aid him in his duty to his superiors and his brother officers; while the study of the second will teach him how to alleviate many of the hardships incident to military life, and to increase the comfort, and improve the condition, moral and physical, of those intrusted to his care.

I. In the first class may be included Dorat's and Puel's Manuals; but we shall not enter into a detailed consideration of these works, as the regulations of the medical department of the French army differ very much from our own. We would, however, strongly recommend Puel as a model for a similar manual for medical officers of the British army. It consists of four parts. The first treats of the organization of the department and the composition of the corps of army medical officers: in this are included the regulations regarding appointments, promotions, pay, uniform, subordination, &c. The second part comprehends the duties of medical officers in regiments, and in hospitals at home, including the examination of recruits and invalids: and the third the duties of medical officers in regiments, in hospitals, and in field hospitals with an army on active service. The fourth part contains the laws regulating, 1st, the recruiting of the army; 2d, the condition of the officers of the army as regards their rank, their position, (viz. full-pay, half-pay, and retirement with or without pension,) their pay, &c.; 3d, the pensions of the army; and 4th, the king's warrant regulating courts of inquiry. It also contains tables of the pay, allowances, and pension of the different ranks of medical officers, forms of the various reports and certificates required by the regulations, and a pharmaceutical formulary for the use of military hospitals.

The 'Aide-Mémoire' by Maillot and Puel, besides the topics just enumerated, contains full instructions regarding the medico-legal questions which may be submitted to army medical officers. These relate chiefly to wounds, their nature and severity,—have they been inflicted during life? are they homicidal, suicidal, or accidental? to drowning, hanging and strangulation, and to rape. There is also a section on the adulterations to which the soldier's food is liable, whether from accident, or fraud on the part of the contractor, with the best means of detecting them Examples are given of the reports required in these various cases, which cannot fail to prove most useful to the medical officers. We do not intend at present to enter into a consideration of these questions, but will reserve our observations for some other time. The work has been published under the sanction of the war minister, and may therefore be looked on as demi-official, which of course enhances its importance.

The little work by Sarlandière holds a position between those already noticed and the treatises on military hygiene In the introduction he says he has collected together, in as small a space as possible, the most necessary information on the following subjects. 1. All that concerns military surgeons in the various situations in which they may be placed, whether as regard their position, or their duties in regiments, ambulances, and hospitals. 2. Everything relating to the maintenance of the health of the soldier, or a summary of military hygiene. 3. The symptoms, causes, and treatment of the diseases which may be treated without sending the soldier into the hospital. 4. The operations which should be performed on the field of battle, and the application of the first dressings. 5. A pharmacopœia for the use of the surgeons of regiments and field hospitals. The appendix contains an enumeration of the diseases and disabilities which exempt recruits from military service, and give rise to the invaliding of soldiers, with extracts from the regulations, laws, and decrees, or warrants relating to the medical department of the army. This work contains many very excellent remarks and much useful information, but from a desire to render it what it professes to be, a vade-mecum, it has been so condensed that it must rather be regarded as an aide-memoire to the experienced officer, than as a manual and guide to the young one who has just entered the service and has still to learn his duty.

II. The second class of these Guide Books includes such works as relate to the maintenance and improvement of the health and efficiency of soldiers. Of late years the attention of the authorities in this country has been much directed to the state of public health, particularly in towns, and commissioners have been appointed to inquire into the subject, with a view to legislative enactments being founded on their reports. But, partly from want of experience, and partly from circumstances which it will not be easy to control, partial difficulties have arisen in carrying out the various schemes, from which, unless some remedy is devised, most serious consequences may result. To illustrate this by an example, we would refer to the metropolitan improvements at present being carried on under the superintendence of the Commissioners of Woods and Forests. One of the great advantages promised from these alterations was that the new lines of streets were to be carried through the midst of a most thickly populated part of the metropolis—including the Rookery and the Seven Dials—which would thereby be opened up, the ventilation be much improved, and the standard of health in the neighbourhood raised. Now, it seems highly probable that these desirable ends will be accomplished, but let us examine in what manner. The houses in progress of erection in the new streets, are of a very different class from those which have been pulled down, and as regards rent and the nature of the accommodations, are quite unsuited for the ejected tenants. A great migration has consequently taken place, principally we believe to the already densely-crowded courts and alleys of Drury lane and of Westminster, where this influx of ill-fed and unfortunate beings can scarcely fail to produce typhus or some other disastrous epidemic in the ill-ventilated, dirty, over-crowded cellars and hovels, into which they are crammed. Before the contemplated improvements in Westminster are carried into effect, it is surely the duty of Government to see that adequate provision is made for the domestication of those who are thus turned adrift without any one to care for them. We would earnestly recommend the Health of Towns Commission, in any measures they may bring forward, to point out the necessity of providing suitable dwellings for the poor before pulling down their present ones, however miserable they may be. Unless some such system is adopted, we shall have the repetition of a scene, by no means uncommon in this country—large sums of money expended in alleviating the misery of the poor, and arresting the spread of contagious disease, the existence of which might have been prevented by a little foresight and a moderate but well-timed outlay. Let not the wealthy suppose this a question that does not affect them; when typhus becomes epidemic it is impossible to say where it will stop, and they may have the melancholy lesson brought home to them, as has repeatedly happened in the epidemics which have prevailed in Glasgow, of the fatal effects arising from the neglect of the principles of hygiene.

These are difficulties, however, which do not attend the adoption of hygienic measures in the army; as the Government is bound to feed, clothe, and house the soldier, so before any extensive alteration is carried out, provision is made that he may not suffer in consequence. Motives of policy, however, occasionally render it necessary to place him in an unhealthy locality, but many of the injurious effects of this may be averted by the adoption of judicious sanitary precautions. These have unfortunately not always been sufficiently attended to; but we may notice it as one of the valuable practical results of the Army Statistical Reports, that many measures have been adopted in compliance with the suggestions contained in them, and with very satisfactory consequences. That we may not be supposed to attach *undue* importance to the benefits arising from attention to military hygiene we may refer to a few instances in which marked advantage has been derived from it. As regards the position of barracks, a striking example is afforded in the diminution of fever which followed the removal of the Augusta Arsenal, United States, from the Savannah to the Sand-hills, three miles distant.* The benefit derived from quartering the white troops in Jamaica, at Maroon Town, and Newcastle, where the mortality averages from two to three per cent., instead of at Port Antonio, Montego Bay, and Up Park Camp, where it exceeded fourteen per cent., is too obvious to require comment. The reduction in the prevalence and fatal character of dysentery, subsequent to the issue of mattresses stuffed with coir (the husk of the cocoa nut,) and a blanket, to the soldier in Ceylon,* and the same result from the diminution in the issue of salt meat in the West Indies, and on the coast of Africa, are worthy of remark. The only other instance we will at present notice was the prevalence of colica pictonum in the United States army prior to 1830, and its complete cessation after the use of white lead for cleansing their belts and gloves had been interdicted, and pipeclay substituted.†

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* Br. and For. Med. Rev., July, 1843, p. 41.

While soldiers are equally subject to topographical and atmospherical influences with persons in civil life, there are other agencies in regard to which they are differently situated. The principal of these are barracks, clothing, diet, duty, exercise, amusements, education, and punishments. In these various particulars (punishments excepted) civilians may consult their convenience or please their fancy, if their purse permits; but there are certain rules laid down with which the soldier must comply. It is, consequently, of the highest importance, in framing these rules, that great care should be taken that they are in no way likely to injure his health or unnecessarily interfere with his comfort; and it is the duty of the military medical officer to see that this is the case, or to point out to his commanding officer, or the head of his department, in what respects he considers them injurious, and the most suitable means of remedying them.

We propose, at present briefly, to advert to the various topics enumerated above, and to point out the principal conditions to be fulfilled as regards each of them.

1. *Barracks.* Hitherto, in selecting a site for barracks it has been customary to consult only the officer commanding in the district, station, or colony, and the engineer department. They have in consequence been usually built in a position whose recommendation chiefly or wholly consisted in its military capabilities, while the question of its salubrity was little thought of. The result of this system has been a fearful sacrifice of life in many of our colonies, and necessarily a proportionate waste of money. Had the White troops of Up Park Camp, Jamaica, during the twenty years included in the Military Reports, been quartered at Newcastle in the Blue Mountains, a change which has been recently carried out, upwards of £50,000 would have been saved during that period, estimating each soldier to cost government £30 before he is equipped, drilled, and landed in that island—an estimate which, we believe, does not exceed the actual outlay. Leaving humanity, then, altogether, out of the question, and the *right* which the soldier has to be protected from *unnecessary* risk of life and deterioration of constitution in serving his country, and viewing it in the extremely commercial light of £. *s. d.*, it is obviously the interest as well as the duty of government to quarter the troops in the most healthy places that can be found, so long as these are compatible with the requirements of the service. A heavy expense having been incurred in building a barrack, it would be extremely difficult to persuade the authorities to abandon it and build another on the plea of the site being insalubrious, but we trust

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* British and Foreign Medical Review, April 1844, p. 336.

† An instance of the value of attention to hygiene in the navy will be found in the case of H. M. ship Valorous, as quoted from Dr. Combe's 'Principles of Physiology,' in the 1st vol. of this Review, p. 334.

that in future measures will be adopted for obtaining information on this vitally important point before any permanent station for troops is established. Where doubts are entertained on the subject, wooden or iron barracks, similar to the houses now sent out to the colonies for emigrants might be employed, as they could be moved at a trifling expense if the situation proved unfavorable. Mutel thus sums up the conditions requisite for a healthy barrack : " It should be raised at least four feet above the ground, situated at a sufficient distance from rivers, and more especially from marshes, ponds, muddy streets, common sewers, pits for steeping hemp, the neighbourhood of cemeteries, slaughter-houses, lime-kilns, and in a word from all establishments for manufactures of an insalubrious nature. There should be a free circulation of air round the building, which preserves it from damp, and it ought to be entirely isolated from other buildings, and have an eastern exposure." We may add that the ground on which it stands should be thoroughly drained.

The two most important points to be attended to in a barrack are, to ventilate the rooms properly, and to avoid over-crowding. The subject of ventilation has, till of late years, been grievously neglected, and we consequently yet stand in need of practical experience as to the best modes of conducting it. We trust that the works of Dr. Reid and others will meet with the attention they deserve from the corps of Royal Engineers, and that these officers will be more successful than they have hitherto been in affecting so desirable an improvement. Whatever means are adopted, they ought to be of such a kind as to be out of the control of the private soldier; a non-commissioned officer should be intrusted with the regulation of the apparatus, and be held responsible for the room being at all times properly ventilated. This remark is applicable to guard-rooms also, their ventilation being generally very defective.

The second object will be best effected by having rooms of moderate size, and by care on the part of the barrack department to allot them, not according to the superficial extent of flooring, but according to their cubic contents. Sarlandière states that the space allowed to each man ought not to be less than 1307 cubic feet (cinq toises cubes,) and Mutel that it should be at least 424 (douze métres cubes.) Motard, in his 'Essai d'Hygiène générale,' recommends 866 to 1039 cubic feet for each patient in hospital; the prison inspectors allow 1000 feet for each prisoner; and Tredgold, in his work on Ventilation, considers 600 cubic feet to be necessary for the preservation of health. We are not so sanguine as to expect that the space recommended by Sarlandière will ever be given to the soldier in barracks, though it would doubtless be a most beneficial measure, but we do trust the day is not far distant when Tredgold's estimate will be adopted as the *minimum*, and strict attention to it enforced. A considerable amount of disease among soldiers is, we fear, too justly attributable to their constantly breathing the vitiated atmosphere of over-crowded and badly-ventilated barrack-rooms.

2. *Clothing.* Much has been written on the subject of the soldier's clothing, and alterations without end have been suggested. We do not agree with those who would sacrifice appearance altogether, to the plea of convenience, or the *unproved* assertion of the dress being injurious to health. A great moral advantage is gained by getting a soldier to take a pride in his personal appearance, and we would willingly make some

sacrifice to effect this. The only very objectionable parts of his dress are the stiff leather stock and the chako. For the former a black silk or muslin one might be advantageously substituted; the chako is too heavy, from its shape compresses the head very much, and affords no protection from the rain. Mutel recommends instead of it, a helmet of glazed leather, which we believe has been recently adopted in the Prussian army. The new chakos lately issued to some of our regiments are said to be much less objectionable than the old ones, but it is a pity they are not a little more ornamental.

A most important addition to the dress of the soldier would be a flannel under-waistcoat. When dismissed from parade or drill, or after a march, it is impossible to prevent him throwing off his coat to cool himself; the perspiration is often suddenly checked, and catarrh, pneumonia, or pleurisy, the result. This would be much less likely to occur, were the chest covered with flannel, and in winter it would likewise protect him from the effects of cold when on duty. Mutel objects to the use of flannels, because "they become at once a cause of disease, by rendering the skin more sensitive, and a powerful obstacle to their cure (diseases of the chest and rheumatism,) by depriving us of a means of treatment; and when the soldier once becomes accustomed to their use, it is dangerous to give them up." To this however we may reply that it is better to prevent than to cure disease. The pamphlet by Mr. Roberts on the clothing of soldiers contains many sensible remarks, and may prove useful in directing the attention of those in authority to the defects of the present system and the appropriate remedies. In stating, however, "that the defective clothing of the soldier is the chief cause of his ill-health," we think he attaches too little importance to other causes of disease. We are pleased to find the subject attracting attention, because if it leads to any investigation on the part of the military authorities, benefit to the soldier will probably result in the substitution of materials of better and more durable texture, and in an improved system of making-up and fitting the clothing. If Mr. Roberts continues his observations, as he promises to do, and we trust he will, a little more care would be well bestowed on the literary part of his labours. It is strange, as we have often remarked, that medical writers are so very careless on this point.

The great weight soldiers are obliged to carry, under the title of "regimental necessaries," amounting to about 40lbs., is very objectionable, especially when it is necessary to make long marches; the knapsack in which they are contained is also of a very bad construction, preventing, by its breaststraps, the due expansion of the chest at the very time it ought to be most free, when the soldier is in active motion, and respiration is consequently accelerated. Any alteration tending to lighten the weight of the contents of the knapsack, or any invention by which it could be made to sit well upon the shoulder without breaststraps, would be a great boon to the army. It can scarcely be doubted that the present mode of wearing it must exert an injurious influence on the health of the soldier, particularly if he is predisposed to pulmonary disease.

3. *Diet.* The diet of the soldier is amply sufficient to maintain him in health, but it might with advantage be a little more varied. The introduction of an evening meal into the army has been frequently advocated, but there are several obstacles to it, the principal one being the

difficulty of providing the necessary sum out of the very small amount of surplus pay at the disposal of the soldier, probably not averaging above 3*d.* or 4*d.* per day, and which he naturally wishes to expend for his own pleasure. It might perhaps be advantageous to make four o'clock the dinner hour instead of one, as the period between meals—at present nineteen—would be thereby shortened. The medical officer should frequently inspect the messes, when served out to the men, to ascertain that the provisions are of good quality and sufficiently cooked.

4. *Duty.* It is a desirable object at all times to reduce the amount of night duty as much as possible; soldiers ought to have at least four nights in bed, as when they have less, for any length of time, it cannot fail to tell upon their health. It has been argued that when the duty is severe, they have not time to run into dissipation, and the consequent sickness and crime are thereby prevented. This, if correct, would only be applicable to day duty; but it is possible so to harass them by over work as to make them rush into those very excesses we desire to prevent. At all events it would be much better to try the influence of moral in means, education for instance, in restraining crime, than physical. Care should be taken to protect the men when on sentry as much as possible from the vicissitudes and inclemency of the weather.

5. *Exercise.* Under this head may be included parades, drills, and marches. As the amount of these varies much in different regiments, and under different circumstances, we may merely remark that it is the duty of the medical officer to watch carefully that they are not carried on in such a manner, or to such an extent, as to be injurious to the health of the men. They ought not to be continued too long at a time, should be varied as much as possible, and in summer, or in warm climates, care should be taken to get them over if practicable before the heat of the sun becomes oppressive. These remarks are still more applicable to the case of recruits who have just joined, than to soldiers who have acquired a knowledge of their duty and become habituated to the service. In recommending that soldiers should be accustomed to active exercise, Sarlandière remarks, "I am far from approving of that *perpetual monotony of drill* to which some commanding officers subject their men; for by keeping them always at the same exercise they are soon wearied, and become disgusted with their condition." On these points much of the comfort and health of the soldier depends, but they must necessarily be left in a great measure to the discretion of the commanding officer; when, however, they affect the health, it is the surgeon's duty to point this out, and firmly, but respectfully, to remonstrate on the subject.

6. *Amusements.* The beneficial effects of athletic games upon the health has been acknowledged from the earliest periods, but it is only of late that Government has taken any steps to encourage them in our army. In compliance with the recommendation of the Military Punishment Commission, fives-courts have been built, and cricket grounds provided in many of the barracks and garrisons throughout the kingdom. This cannot fail to be of great advantage, by affording an agreeable amusement to the men when off duty, by furnishing them with the means of healthy exercise, and thus keeping them out of the canteen and other places of low debauchery; but to derive the full benefit from

any measures of this nature, the officers must take an interest in, and endeavour to promote them. In addition to the games mentioned above, we would recommend the adoption of football, quoits, skittles, foot races, and others of a similar nature. These have at different periods been introduced into several regiments, and promoted by trifling subscriptions from the officers; and where they have afterwards been discontinued, it has arisen from want of proper management, or from indifference on the part of those in authority. Were a system of this kind more generally pursued, and the men encouraged to distinguish themselves by some occasional trivial indulgence, one of the most unpleasant duties of a commanding officer, that of punishing delinquencies, would be materially lightened, and the health and efficiency of the men improved.

7. *Education.* While we are fully impressed with the advantages to be derived from the introduction of such amusements, in promoting the health and efficiency of the soldier, and in diminishing the amount of crime, we anticipate still greater benefit from the adoption of a general system of education in the army. Soldiers ought to be considered as something more than mere automata, and while they are taught their military duties and have the necessity for an implicit and unquestioning obedience of orders impressed upon them and enforced, adequate means should be adopted to cultivate their intellectual faculties, and thereby afford them a rational means of employing their leisure hours, and an opportunity of qualifying themselves to occupy a respectable position in society when discharged from the military service. To effect this desirable object no recruit should be dismissed drill till he is reported able to read, care being taken that he understands what he reads, to write legibly, and to be acquainted with the first rules of arithmetic. Were this done, colonels would have a much better opportunity of selecting non-commissioned officers, and soldiers would be induced to spend part of their leisure time in reading instead of in the canteen; and when at length discharged for disability, or length of service, would be better enabled to provide for themselves and families, and would reflect credit on the service to which they had belonged.

We infer that this subject has received more attention in France than in England. Mutel, in treating of education, says, "the nation which teaches its young soldiers—born of poor parents who have been unable to give them the benefit of education — reading, writing, grammar, history, geography, arithmetic, drawing, and music, has not a bad government, since it knows how to recompence those who commence their career of citizens by sacrificing to the defence of their country the first-fruits of their youth." We much doubt whether the French actually teach these various branches, but the profession of doing so is an acknowledgment of the duty; and although we do not expect our Government to undertake so much, we sincerely desire to see every soldier receive a plain useful education. Reading-rooms having already been established, and a sum of money (small enough, it is true,) being annually expended for books for the soldiers' libraries, it is surely but reasonable to expect that steps should be taken to render them available to all.

But while the intellectual education of soldiers is neglected, we fear the provision for their moral and religious instruction is even more deficient. Something more is required than mere attendance at divine service, or hearing the liturgy read once a week: to render a clergyman's ministrations useful, he must mingle with his flock, must become acquainted with their habits, their wants, their virtues and vices, and must watch for opportunities of addressing to them a word in season. The recently appointed chaplain-general to the forces, the clever author of the 'Subaltern,' must, from his early career, have a practical knowledge on these subjects, which peculiarly qualifies for the superintendence of the department; and we hope soon to learn that he is directing his talents, and using his influence with those in power, to secure an adequate provision for the spiritual wants of the army in all quarters of the globe.

8. *Punishments.* The consideration of the influence of punishments on health is one of very great importance, but to which our space will not do more than permit us briefly to advert.

The principal punishments inflicted by sentence of a court martial are flogging and imprisonment: the former of these, as at present administered, is not likely to injure the health;* would that we could say the same of the latter! The diet in many of the prisons, though adequate enough for the unfortunate civil prisoners, who probably prior to their entrance rarely knew what it was to have a full meal of nutritious food, is by no means sufficient for the soldier, who has been accustomed to his $\frac{3}{4}$lb. of meat, with soup, potatoes, bread, and coffee daily. This is no theoretical objection, but has been forced on our conviction, by having frequently seen men return to their regiments very much debilitated even after short periods of imprisonment, and by a few cases in which after a long period (twelve months) they scarcely performed another day's duty, and ultimately were discharged the service or died of pulmonary consumption. So obviously was this a cause of disease in the Penitentiary at Millbank, that a few years ago, a portion of that building was appropriated exclusively to soldiers, and a different scale of diet adopted for them; a system which should have been extended to all the prisons in the kingdom. As military prisons are now to be generally established, and offenders sentenced by courts marshal no longer to be sent to the civil gaols, we trust the subject of their diet while so confined, will receive the attention it deserves, and that care will be taken to prevent a definite punishment being converted into a very severe and indefinite one, by entailing on the individual years perhaps of misery and suffering from ruined health, or an early grave. We must protest against punishing soldiers by interference with their food, as in the case of imprisonment with bread and water, because it is an infliction of a very unjust and unequal character, and the ultimate effects of which cannot be appreciated.†

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* It would be out of place here to discuss the question of the abolition of corporal punishment, but we may ask those who raise an outcry against it as being degrading to the soldier, and recommend secondary punishments, i. e. imprisonment, as a substitute for it, whether is it more degrading to a soldier to be flogged or to be associated with convicted felons and hardened gaol birds, and whether is he more likely to be improved by castigation and the fortnight or three weeks he has for reflection in hospital afterwards, or by the acquaintances he will form in prison among the worst and most abandoned characters in the kingdom? Most willingly would we see flogging abolished, for it is one of the medical officer's most disagreeable and responsible duties to superintend it; but we fear, constituted as our army is, its continuance is a matter of absolute necessity.

† To those who feel an interest in this subject, we would strongly recommend a perusal of a highly interesting series of papers in the 'United Service Magazine' for 1843-4, by Henry Marshall, Esq., Deputy-Inspector-General of Hospitals, entitled 'Historical Notes on Military Punishments.'

The minor punishments ordered by commanding officers are not likely to prove detrimental unless when carried to excess, if we except drill in heavy marching order, the objection to which will be found in the remarks we have already made on the soldier's knapsack.

We have said nothing on the important subject of personal cleanliness, because that is already well enforced throughout the army, so far at least as regards the face, hands and feet, and the dress. We hope, however, the popular movement now going on to provide baths for the working classes will suggest to the authorities the propriety of building baths in every barrack, thereby affording to the soldier the means of general ablution which at present are quite out of his reach: where space can be procured large swimming baths ought to be erected and the men be instructed in swimming, an acquirement which might be of the utmost consequence to them on service.

To improve the hygienic condition of the soldier must be a work of time, and the medical officer will meet with numerous obstructions in his endeavours to effect this laudable object. There will be many prejudices to overcome, and he may expect to have his plans sneered at, or neglected, and occasionally his motives misconstrued. But let him not weary in well doing; *gutta cavat lapidem non vi sed sæpe cadendo;* and it requires a good deal of dropping to wear through the prejudices of the heads of departments when no precedent can be adduced, or where an outlay of money is required. We have heard suggestions for increasing the comforts of soldiers objected to by officers of high standing, because they said "by coddling the men" you would make them effeminate, and when it became necessary to take the field, they would be unfit to go through the hardships of a campaign. We have no fear of such a result; the greater the efficiency and the higher the standard of health of the soldier, the better will he be able to endure the fatigues of active service; and when he finds every attention paid to his comfort in time of peace, he will the more cheerfully submit to privations when they unavoidably occur. Notwithstanding all that has been adduced in favour of cold, hunger, and discomfort, in fortifying a constitution against the contingencies of famine and fatigue, the practice deserves no commendation; privation of food and insufficient clothing stunt the growth, and diminish the powers of the body, at the same time that they impair the energies of the mind.

The works of Sarlandière and Mutel are evidently the productions of men of much experience, who have seen a good deal of service and have the interests of the soldier at heart. The latter goes more into detail, and is therefore perhaps preferable as a guide book, but both are well deserving of attentive perusal. They are very practical and are tolerably free of that inflated style of writing for which modern French works are so remarkable. We would have been better pleased, however, had Mutel acknowledged the sources from which he derived his information: he scarcely in any instance quotes his authority; and although he appears to have drawn liberally from Maillot and Puel's Aide-Memoire, we do not find their names mentioned throughout the work.

## Art. V.

*Mémoires de la Société Médicale d'Observation de Paris.* Tome II.—*Paris*, 1844.

*Memoirs of the Medical Society of Observation of Paris.* Vol. II.—*Paris*, 1844. 8vo, pp. 628.

After the lapse of six years this Society has once more given indication of its existence by the volume before us. It contains four essays, the first of which, by M. Louis, on the Yellow Fever of Gibraltar, we noticed on its appearance in an English dress from the pen of Dr. Shattuck; and shall therefore not again advert to it. The second contains an account of a series of extremely well-conducted observations on the pulse in infancy and childhood, by M. Valleix. All investigations concerning the pulse need a larger amount of patient perseverance than is possessed by most, as well as very considerable acumen in avoiding sources of error which might otherwise entirely vitiate any result at which the observer might arrive. Hence, till comparatively recently, we have had little beyond mere assertion, or at best very inconclusive experiments, as the basis of our knowledge with reference to the variations of the pulse in health and disease. All the difficulties that involve this subject in the adult become doubled when the inquiry refers to infancy and childhood, and our knowledge, small as it was, with reference to the pulse in the grown subject, was incomparably less with regard to it in the child. The interesting researches of Dr. Knox and of Dr. Guy were carried on in the grown subject, those of Mr. Gorham, published some years since in the 'Medical Gazette,' and still more recently those of M. Trousseau, had reference to the young subject, but were not sufficiently numerous to be decisive. The observations of M. Billard on the pulse in infancy, were not made with due precautions, hence his results are very contradictory and inconclusive. M. Valleix's work on children's diseases, published between six and seven years ago, contains the particulars of a series of observations on the pulse in the new-born infant, which are republished here in a more extended form, with the addition of some others hitherto unpublished. The close approximation of many of his conclusions to those at which Mr. Gorham arrived, tends much to increase our confidence in statements which have thus had a double confirmation.

We could scarcely recapitulate M. Valleix's conclusions more briefly than he himself has done in the following summary:

"1st. In new-born children the pulse is less frequent than at the age of six months; the mean frequency while sleeping was 87; but sleep itself being a cause of diminished frequency of the pulse, it is necessary to select a somewhat higher figure as that of the normal pulse. Everything warrants the supposition that this varies in frequency from 90 to 100.

"2d. Increase of temperature, even when not so considerable as to be sensible to the subject of the observation, causes an appreciable acceleration of the pulse for each degree of temperature. Further observation alone can teach us what is the exact relation between increase of temperature and acceleration of the pulse.

"3d. Although the pulse constantly diminished in frequency in proportion as the day advanced, yet it would be premature to conclude that these facts support those which have been published by Dr. Guy. This author indeed states that the pulse progressively diminishes in frequency from morning to evening. Now, all my observations on children were made in the morning, and as the children were always fed before my observations commenced, the acceleration of the pulse in the early hours of the day, and its subsequent diminution in frequency must doubtless be in great measure attributed to this cause.

"4th. The least movement is sufficient to occasion a considerably increased frequency of the pulse in children, and the same result follows from any emotion or from mere fretfulness. Those authors who have examined the pulse without bearing in mind these circumstances have thus been unavoidably led to erroneous conclusions.

"5th. The influence of sex is very considerable even in young children. The pulse of little girls is in a marked degree more frequent than that of little boys.

"6th. The frequency of the pulse diminishes sensibly during sleep.

"7th. The frequency of the pulse does not undergo any very marked variations from the age of seven to twenty-seven months; its mean being about 126; on distinguishing the two sexes 121 in male children, 128 in female. These numbers express the frequency of the pulse under ordinary circumstances: but assuming the children to be in a state of perfect rest, the numbers would then be 119 in males, 124 in females.

"8th. Judging from some observations too few in number to be considered decisive, the pulse would appear to continue a little above 100 up to the age of six years.

"9th. The average frequency of inspiration in children between seven months and two and a half years old is 30 or 32; and is to the frequency of the pulse as 1·4." (p. 380.)

We regret much that M. Valleix did not test the accuracy of his statement, concerning the frequency of the pulse in new-born infants, by more extended observations. The average he obtained is considerably lower than that assumed as correct by Mr. Gorham; it is likewise lower than that of M. Billard, and than that mentioned by M. Roger as the result of his recent experiments. He grounds his opinion upon observations made at the Hospice des Enfans Trouvés on thirteen infants whose age varied from two days to twenty-one; a number decidedly too small to yield perfectly satisfactory results.

The fact, if fact it be, that the pulsations of the heart sink after birth permanently so far below their frequency during fetal life, and do not regain it till after the lapse of several months, is certainly very curious. Billard's observations tend to confirm the accuracy of this statement. He found that of 40 children, aged from 1 day to 10 there were as many in whom the pulse beat with about the same frequency as in the adult, as there were of those in whom it beat with much greater rapidity. The same fact, too, appeared to hold good in children aged from one to two months, and in others aged from two to three months, while in the small number of children above the age of one year, in whom Billard had ascertained the frequency of the pulse, he found that it beat with greater rapidity than in the adult. We cannot, however, feel thorough confidence in observations made at the Hôpital des Enfans Trouvés: for even the healthiest children there have been exposed to influences that must tend to impair their health before their admission to the institution, and others scarcely less injurious continue to act on them during their residence there. Eight of the thirteen subjects of M. Valleix's observations died a very few days afterwards; and though they appeared to him to be in perfect health when he investigated the frequency of their pulse, we must see his results confirmed before we can subscribe to their accuracy, or attempt to reason on them as on well-authenticated facts. The Lying-in Hospital at Dublin affords a wide field for examining the frequency of the pulse, during the first few days after birth, under circumstances the most likely to ensure trustworthy results; and we do hope that this point as well as that of the temperature of new-born infants, will engage the attention of the enlightened master of that institution.

The remainder of his statements rest on 567 observations, (made during 49 days, on 43 children, whose ages varied from 7 months to 6½ years) so accurately conducted as to warrant great confidence in their results. For the details of the observations we must refer to the paper itself, but we cannot avoid noticing the apparent disingenuousness of M. Valleix in not stating clearly that they are not new, and that this essay consists of little more than a more extended analysis of those researches on the pulse, which he published seven years ago in his 'Clinique des Maladies des Enfans.' He confesses to having had no opportunity of extending his researches on the pulse in new-born infants since the publication of that work, but no allusion is made to his observations on elder children having already appeared in print. On comparing them, however, with those which are contained in his former work, we find that the conclusions there were deduced from 461 observations made on 39 children, so that this essay consists in truth of the results of a further examination of the old materials, with the addition of 106 observations made on 5 subjects, who were examined at the same time with the others, though the results of his researches on them were not then published. We do not for a moment deny that this further examination of his former materials has led M. Valleix to many interesting and important conclusions. Still it would have been more ingenuous for M. Valleix to have stated the real nature of this paper, and to have announced that it contained those details for which he had no space in his work on Children's Diseases, but which he then promised "to publish elsewhere with all requisite minuteness."*

Lest we should be supposed to have misrepresented M. Valleix, we quote the words in which in the preface to this volume he speaks of the essay we have been noticing.

> "In the second memoir," says he, "I have related my observations on the pulse in children. Considering this question as very complex, I was anxious to see whether by subdividing it and looking at it in all points of view, it would be possible to arrive at more trust-worthy conclusions, than are attained to by the ordinary modes of investigation. This undertaking has impressed on me the conviction that the way I have pursued is the only one which can lead to truth." (p. 25.)

But pass we now to a memoir by M. Ducrest which stands next in order. "On an accidental ossification discovered on the internal surface of the cranium in puerperal women." M. Valleix informs us that M. Ducrest, studied this singular alteration, of the occurrence of which some

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* Clinique des Maladies des Enfans Nouveau-Nés, p. 23.

German writers had a kind of vague notion, "*à peine entrevu par quelques médecins Allemands*," in the different periods of its formation. M. Ducrest, himself remarks.

> "It would have been of great service to me to have met with any work on the same subject that might have enabled me to add to the rather low figures on which some of my conclusions rest. I regret therefore that I was unable to procure a memoir, the publication of which in the German journals had been mentioned to me by M. Danyau." (p. 381.)

Who would have thought, from this language that a minute account of the appearance discribed by M. Ducrest as the results of 90 observations has been already published by M. Rokitansky: first in the 'Oesterr. Med. Jahrb.,' Bd. xv, Stück iv; and subsequently in his 'Pathologische Anatomie,' Bd. ii, Liefer. ii, s. 237?

In some respects indeed this very ignorance of the researches of others, confers additional value on the observations of M. Ducrest, which have led him wholly unawares to conclusions very similar in all the more important respects to those of Rokitansky. He sums up his paper in the following brief statement.

> "1st. That on the internal surface of the cranium of lying-in women, we meet with an accidental product, at first analogous to cartilage, and subsequently assuming the consistence of bone.
>
> "2d. That the cranium and dura mater in connexion with it, exhibit no alteration.
>
> "3d. That it develops itself most frequently in young women.
>
> "4th. That its presence does not give rise to any peculiar symptoms." (p. 432.)

These conclusions agree pretty nearly with those of M. Rokitansky; there are, however, some points of difference in his description of the affection which we will presently mention. After detailing in full twelve observations M. Ducrest proceeds to give a general description of this pathological condition. The first trace of it consists in a somewhat increased vascularity of certain points on the interior of the skull; usually of some two or three of the digital fossæ; while the bone and dura mater continue perfectly unchanged. After a time a red spot is seen in the midst of each of these little patches of vascular network; and on examination it is found to consist of red pulpy matter easily removed by the finger. When the number of these spots was very small, not exceeding two or three, they were confined to one side of the cranium, but if more numerous they existed on both sides. In 43 out of 90 cases they existed only on the vault of the cranium, and were confined to the bottom of the digital fossæ; 38 times they were also present along the lateral or anterior parts of the frontal bone; twice they existed on the parietal bones, and thrice along the sagittal suture. When more numerous they cover the eminences between the fossæ, and, uniting together, form a continuous layer of variable extent. This union usually commences by the fusion of the patches on either side of the frontal bone, whence the deposit of new matter extends in various directions. When the deposit upon the vault of the cranium is very extensive, the base itself becomes involved; the anterior or lateral part of the roof of the orbits, or the upper surface of the processes of Ingrassias being first affected, and that portion of the occiput on which the cerebellum rests the last. In a still more advanced stage, the whole arch is covered, but the new deposit never extends completely over the base. A similar deposit on the exterior of the skull existed only in four instances, and did not then correspond in situation to the osteophyte within.

These deposits vary in thickness from that of a couple of sheets of paper to three or four millimeters. Their thickness is by no means in direct proportion to their extent, nor is it the same through the whole extent of the layer; but is usually thickest anteriorly, less thick behind in all those instances where the deposit involves the whole arch of the cranium. When the patches of new matter have advanced beyond their first stage of development, they are seen to be formed of two layers: an internal, meningeal, which is thin, compact, and represents the superficial lamina of bones; and an external, cranial, which is thicker and cellular, representing their spongy substance. The dura mater, in contact with these growths, always appears perfectly natural, the vascularity of the cranium around them is considerably increased, but nothing seems to warrant the supposition that they are the result of an inflammatory process.

No symptoms peculiar to this affection existed during life, and though it appears to be connected with pregnancy, yet the circumstance of its having come under M. Ducrest's observation more frequently in primiparæ than in women who had previously borne children, renders the exact nature of this connexion exceedingly difficult to discover.

Professor Rokitansky's statements complete this account, and confirm it in most points. According to him, however, the new deposits are found on the prominences of the inner surface of the cranium more frequently than in the depressions. His account of their formation agrees with that of M. Ducrest, and like him he distinguishes three different stages in their development. In its first stage the new matter exists as a mere vascular exudation, easily removed from the inner table of the skull, which is either perfectly normal in appearance, or, at most, has lost a little of its smoothness. In its second stage, it is a soft, flexible, finely porous cartilaginous lamina, beneath which the inner table of the skull presents a manifest roughness, or at least the pores of its vessels are seen to be notably enlarged. At the commencement of the third stage it is still pliable, but is no longer wholly cartilaginous: bony matter being now intermingled in its substance. It presents two surfaces: one smooth and finely porous, which is in contact with the dura mater; the other, which is firmly connected with the inner table of the skull, is rough and cellular. Numerous lamellæ and spiculæ of this spongy substance are the medium of its connexion with the cranium, and both they and many blood-vessels are torn through in any attempt to detach it.

The new deposit does not pass beyond this stage during pregnancy or the puerperal state, but Professor Rokitansky has followed it further than M. Ducrest, and is able to state positively that it subsequently becomes completely ossified, and forms an integral portion of the skull, either becoming exceedingly dense and one in substance with the inner table of the skull, or else being connected with it through the medium of a new diploe. In successive pregnancies this deposit becomes thickened by the addition of new layers, which, however, are not immediately connected with the old bone, but a thin stratum of diploe always intervenes between the two.

With reference to the causes of the affection, Professor Rokitansky is unable to go beyond the mere statement, that a puerperal hyperostosis of the skull exists in connexion with repeated pregnancies; his experience, contrary to that of M. Ducrest, having led him to regard it as of more frequent occurrence in multiparæ than in primiparæ. He has met with it in women dying at all periods of pregnancy, from the third month to its termination, as well as in those who died in the puerperal state. It has not appeared to him to betray its existence by any peculiar symptom or to predispose to any particular form of fatal illness.

Professor Rokitansky mentions also that he has met with a similar condition in eighteen other persons, some of whom were males, though in these cases the deposit of bone was by no means so extensive as in pregnant or puerperal women. These persons, too, had died of most various diseases, and presented no symptom during life indicative of the existence of this affection.

The last paper is by M. Flauvel, on 'Capillary Bronchitis;' and consists of a republication of his dissertation which treated of this affection in children, and of a series of observations upon it as it occurs in the adult. In our Number for October 1841, will be found a review of his dissertation, which renders any notice of one half of his essay needless; and we reserve for some future time our notice of his observations on the disease in adults, since it would engage us in discussion for which we have no space at present. In brief, then, be it said, that they show the same conscientious pains-taking observation as we noticed with well-merited praise in his inaugural dissertation.

Such, then, are the contents of the second volume of the Transactions of a society which proposed to itself to reform, almost to remodel, medical science, and which has interposed a delay of six years between the publication of the first and second volume of its memoirs, in order to ensure their excellence. The three essays we have noticed contain, unquestionably, much that is very valuable; but the pretensions of the society do not allow us to judge their performances by any ordinary standard. We find that the whole of one essay, and half of another, consist of little more than a republication, in a more extended form, of facts which their authors have long since laid before the profession; while the third contains an account of a phenomenon described more completely several years ago by a German anatomist.

We honestly confess that we have risen from the perusal of this volume with disappointment. This is not the place for us to examine how far the Société d'Observation are in the right course in their mode of interrogating nature; sure we are, however, that their memoirs must differ from those we have just noticed, before we can look for results at all commensurate with their expectations.

## ART. VI.

1. *Die Plastische Chirurgie nach ihren bisherigen Leistungen kritisch dargestellt. Eine von der Medicinischen Gesellschaft zu Gent gekrönte Preisschrift.* Von Dr. FRIEDRICH AUGUST V. AMMON, Hofrath, Leibarzt s. M. des Königs von Sachsen, &c. &c.; und Dr. MORITZ BAUMGARTEN, Practishem Arzte zu Dresden, &c.—*Berlin*, 1842.

*Plastic Surgery, critically examined as to what it has hitherto accomplished; a Prize Essay of the Medical Society of Gent.* By Dr. F. A. VON AMMON and Dr. MORITZ BAUMGARTEN.—*Berlin*, 1842. 8vo. pp. 310.

2. *Traité sur l'Art de restaurer les Difformités de la Face, selon la Méthode par Déplacement, ou Méthode Française.* Par M. SERRE, Professeur de Clinique chirurgicale à la Faculté de Médecine de Montpellier, &c. &c.—*Montpellier et Paris*, 1842.

*Treatise on the Art of Restoring Deformities of the Face, by displacement (sliding of the flap), or the French method.* By M. SERRE, Clinical Professor at Montpellier, and Surgeon to the Hospital St. Eloi.—*Montpellier and Paris*, 1842. 8vo. pp. 468.

3. *Cases of Deformities of various kinds, successfully treated by Plastic Operations.* By THOMAS D. MÜTTER, M.D. Professor of Surgery in Jefferson Medical College, &c.—*Philadelphia*, 1844. 8vo. pp. 38.

4. *Cases of Deformity from Burns, successfully treated by Plastic Operations.* By T. D. MÜTTER, M.D. &c.—*Philadelphia*, 1843. pp. 24.

5. *A Report on the Operations for Fissures of the Palatine Vault.* By T. D. MÜTTER, M.D. &c.—*Philadelphia*, 1843. pp. 28.

As six years have now elapsed since we introduced the subject of Plastic Surgery to our readers, during which interval there have been many active labourers in this division of the field of medicine, we have thought that the time has arrived for us to go forth and see what of novelty and interest we may glean for the profit and entertainment of those who honour us by their confidence. We are further urged to this task by a promise which we recently made of renewing our acquaintance with Dr. Mütter's pamphlets at an early period, as well as by a consciousness of the peculiar bareness of our own literature in this useful department of surgery.

The reason of this bareness we are at a loss to comprehend, as indeed are likewise our continental brethren; for we find Von Ammon speculating why a people of so practical a turn as the English should not have given some more substantial evidence of their cultivation of plastic surgery, than such as is to be found scattered here and there in our journals, or forming a scanty chapter in our systematic works of surgery. The love of novelty, however, is probably not so great with the English as with either the Germans or French, nor are we so ready to give an undue importance and weight to that which is new, until it has received the sanction of time and experience. Be this as it may, it certainly does excite our surprise that the last six years have not elicited any work embodying the experience of some one of our countrymen possessing the requisite opportunities and taste for the art; and we therefore the more willingly apply ourselves to the task of supplying, in some sort and measure, the deficiency.

Whilst we must admit that the art of which we now treat is one of a purely mechanical nature, which indeed is implied in its name, we feel ourselves justified in claiming for it, on the score of its usefulness and the relief it affords to human suffering, a more elevated rank than it would at first seem to merit. "La Chirurgie plastique peut devenir la fleur de toute la médecine opératoire," was the motto selected by Von Ammon for his treatise; and this prettily as well as justly embodies the sentiment with which he, in common with other writers on the subject, regards this favorite branch of the healing art; healing in its most extended sense, as well to the wounded vanity of the deformed outcast from society, as to the physical suffering of the blear-eyed and lipless and mouthless wretches, whom it restores to those blessings, which ruthless disease, or, perchance, the self-assassin's hand has deprived them of, marring at once both the usefulness and beauty of that fairest of created things, the human face. Further, we would claim consideration for plastic surgery, on the ground of its being a division of our art requiring considerable natural ingenuity, as well as acquired skill; and we venture to assert that there are comparatively few who possess the requisite qualifications to become expert plastic operators, that is, in the more complex operations embracing (if we may credit the authors) apparent impossibilities. Such plastic operations as may be reduced to rules, the Rhinoplastic for example, require little more than a strict adherence to these rules for their proper performance; but in a great many the operator has to form as well as to carry out his own design, by which his ingenuity as well as skill is tested: and he has also to calculate how far he may trust to the cooperation of Nature, or where she is likely to take offence and forsake him; leaving, in such case, his patient in a worse condition than before he was interfered with. Therefore, though the part the surgeon takes is purely mechanical, it is requisite he should bring with him all the knowledge which can bear upon the probability of retained vitality and adhesion of parts, in the new relation which they are forced to bear to each other.

In our last article* we gave our readers a succinct history of the origin and progress of plastic surgery from the earliest period of its existence until the present day, and also entered somewhat at large upon the various divisions of the art. We shall, of course, avoid retracing our steps, and therefore request our readers to regard the present article as supplying the deficiencies which the former presented, together with such new matter as we may find worthy of transcription from the works which head this paper.

The authors whom we have selected as representatives of their several countries have for some time been favorably known, as surgeons, to the profession, and we therefore have the more confidence in the results which their labours in this peculiar department present us with. Von Ammon and Mütter had already earned a reputation as plastic surgeons when we first took up the subject in our Journal, as a reference to the article in question will show: and M. Serre's 'Traité de la Réunion immédiate' constituted, as he informs us in his preface it did, a fitting introduction to the study of the restoration of lost parts; and he accordingly devoted especial attention to this subject. The conjoint treatise of Von Ammon and Baumgarten gained for them the prize offered by the Medical Society of Ghent, and affords a good view of the state of plastic surgery in all its departments; though, as might be anticipated, the peculiar views of the authors and their own operations hold a prominent position; a remark which is equally applicable to their French competitor. We had occasion in our former review to complain of the rather uncourteous handling which his Gallic contemporaries received at the hands of Zeis; this is now paid back with interest by M. Serre, who acts the part of champion to his nation (not forgetting his own peculiar self,) and employs invective as well as reclamation in a way which, to say the least, is undignified, and savours much both of bad taste and want of temper, alike subjecting its author to the charge of jealousy, and interfering with the usefulness of his work. The simple details contained in the unobtrusive pamphlets of Dr. Mütter,* at once stamp him as an enterprising and clever surgeon, who is conscious of possessing merit and originality enough of his own, to spare their due meed to others who have laboured in the same field with himself.

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* No. for April, 1839.

A prominent and laudable feature in M. Serre's volume is the effort he makes to reduce, as much as possible, the art of remedying defects by plastic operations to fixed principles and rule; and he especially combats the opinion of Velpeau that cheiloplasty is unsusceptible of detailed directions, and that the operator must modify his plan of operating almost as often as he practises it: how far he succeeds in making good his position we shall give our readers some opportunity of judging. Another and even more prominent object of our French author is to claim for his country a certain mode of operating which he distinguishes as "la méthode par déplacement, *ou* la méthode Française." He accordingly states in his preface that it is his intention to treat neither of the Indian nor Italian methods of operating, but that the theme of his discourse and praise will be the French mode. Now we cannot but protest in the outset against this assumption on the part of M. Serre; it may be flattering to his national vanity thus to appropriate for his own country that which is certainly now admitted to be the most useful and generally applicable form of operation; but, if we interpret the word aright, (and that we have ample means of doing by the subsequent descriptions,) it is one which has been extensively employed heretofore in Germany as well as France. That M. Serre has successfully answered the objection that plastic operations are attended with considerable hazard to the patient, is well attested by his statement, that of one hundred and fifty cases which have fallen under his own immediate care, only one was lost, and that from a casualty not necessarily associated with the operation. This large share of practice will dispose us to pay that respect which is justly due to the opinions of the operator; whilst we cannot but smile at the closing paragraph of his preface, that "he has it at heart to prove that, contrary to the assertions of MM. Zeis and Phillips, as regards plastic surgery of the face, France need not be jealous even of Germany;" which national "amour propre" the author freely confesses would alone have prompted him to publish the present work.

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* First published in the American Journal of Medical Sciences.

Having extended the foregoing remarks beyond what was our original intention, though we think not beyond what is necessary as an introduction to our authors, and our duty as reviewers, we are now prepared to commence the analytical division of our labours, which we shall do by passing at once to the details of the various divisions of plastic surgery, collating as we proceed. Our table of contents will therefore include the following heads: Operations connected with the Nose, Mouth, Cheeks, Lips, and Eyelid; and we shall subsequently devote a few remarks to the other pamphlets of Dr. Mütter, named at the head of this article.

I. THE NOSE. In the *rhinoplastic* operation we have not a great deal of novelty to record. Von Ammon describes the various operations which have been performed for the removal of the whole or part of the nose, commenting on their relative advantages. The principal points of importance which he insists on have been pointed out in our previous article, and we therefore do not consider it necessary here to repeat them. He notices Labat's operation for the formation of a new septum from the palm of the hand, but objects to it as calculated to maim the thumb and produce, after all, but a poor substitute for the original structure: when practicable he prefers taking the necessary material from the upper lip,—a preference in which we entirely concur. In his chapter on the same subject M. Serre narrates a case of Professor Dieffenbach, which escaped our notice in our previous review of his work, and which we are tempted to notice from the boldness and ingenuity with which it was conceived, and the success which attended it. The subject of the operation was a young girl of twelve years of age, whose face was sadly disfigured by scrofula, the centre presenting in place of a prominent nasal organ, "a tortuous irregular furrow which gave the face the appearance of a death's head:" a portion of the nasal tegument covered in the empty space left by the loss of bone; but this was folded inwards. The following is the account of the operation:

"Two incisions were made on the sides of the depressed nose, throughout its whole length, and extending from below upwards; by this an isolated band of skin was left, three times as broad at its base as at its upper part, and united to the upper lip by a fillet of skin both thin and short: above, this band adhered to the integument by a narrow bridge. The soft parts were then separated at the two extremities of the nose down to the bone. The next step was, by means of two semilunar incisions, continuations of the lateral incisions, to separate the alæ nasi from their external adhesions; and the operator was thus enabled to draw out, from the depth at which they had been so long hidden, the bands of skin, contracted above but broader below, which resulted from the incisions above enumerated. M. Dieffenbach lastly excised the internal margins of the back of the nose (bounding the furrow), and the external edges of the lateral borders and alæ, the firmness and thickness of which encouraged his hope of success. After a short interval the opposed borders, which were destined to form the back of the nose, were first connected by six points of suture; and then in like manner the alæ and lateral margins were attached to the skin of the cheeks and upper lip by eight sutures, the cheeks having been previously prepared by separation from the bone to the extent of some lines. The band which formed the septum being found too short, was elongated by two small lateral incisions in the upper lip; and a small quill enveloped in oiled charpie was introduced into either nostril. Further, with a view to preventing the approximation of the cheek and corresponding border of the nose, a long and narrow needle, furnished with a piece of rounded leather at its extremities, was passed from the integuments of the cheek to the middle of the nose, and its point rolled round with pincers in a spiral form." (Serre, p. 236 et seq.)

It is unnecessary for us to follow out the history of this case further in detail: suffice it to say that this resuscitated organ gradually assumed more and more consistence, during which it was supported, for the first ten days as we have described, and afterwards for an equal time by a needle on either side; that cauterization of the deep surface of the nose, and frequent injections were employed; and lastly that the upper lip was made to aid in completing the septum. The result, as we have already remarked, was entirely satisfactory.* M. Serre closes his comments on this case by claiming for M. Larrey the merit of a similar operation ten years previously; in proof of which a case is appended of a somewhat similar process for remedying a like deformity; but as we are by no means disposed to act the part of umpire in this instance, we leave our readers who may be interested in the subject, controversially considered, to consult for themselves the original. The concluding flourish is all we can find room for: "Let M. Zeis then cease to set himself up against M. Larrey, by saying that he has only united some wounds of the nose by retentive bandages."

In our former article we spoke of the various expedients resorted to for the formation of a new fleshy septum to the nose, and especially approved of that operation which, by removing the superabundant texture from the upper lip, at once improved its appearance and supplied the requisite material for the neighbouring organ. We see that M. Serre proposes what he considers an improvement on this operation, which consists in "detaching the flap by its superior part, and subsequently separating it after it has contracted the requisite adhesion to the tip of the nose." We are disposed to think that the closure of the hiatus in the lip would be found much more difficult in this mode of operating; and the ready conversion of mucous membrane into epidermis renders it superfluous. We perceive, by the way, that, in connexion with this division of the subject, M. Serre attributes considerable merit to M. Blandin for the first application of the principle which involves the convertibility of the mucous membrane above noticed; the memoir alluded to bears the date 1839 to 1840,† that the fact and its application were familiar to us in the early part of the former year our readers may satisfy themselves by reference to p. 403 of our Seventh Vol.

M. Serre's twenty-first case presents us with a good specimen of the satisfactory results obtained by successive operations,—in this instance seven in number. In the individual in question (a young woman) "the greater part of the left cheek was destroyed; a considerable portion of the superior maxillary bone, and the corresponding soft parts to a still larger extent were involved in this solution of continuity, which established a permanent communication with the mouth, of which the boundaries were, internally the median line of the face, externally an imaginary line extending vertically from the angle of the eye to the lower jaw, inferiorly the lower lip, and superiorly a horizontal line five or six lines removed from the lower border of the orbit." Here was indeed a test for plastic surgery: the operations extended over a twelvemonth, and were ultimately so entirely successful as to call forth the eulogy of the operator (M. Roux,) in the following words: "After such a triumph obtained by the plastic art, I should be tempted to maintain that there is nothing beyond the range of possibility referring to restoration of the face." The date of this operation (for the details of which we have not room,) was as early as 1826. We must find space, however, for a case of M. Lisfranc's, in which the rhinoplastic operation was performed by the French method; it is as follows:

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* The case was first communicated to the French institute in 1830.

† Serre, Note to p. 258.

> "In the month of June 1830, a woman, aged 30 years, entered the Hospital of la Pitié, with an almost total loss of the nose, the position of which was occupied by a hideous opening, which left uncovered all the anterior parts of the nasal fossæ. The neighbouring callous and adherent skin was folded inwards and continuous with the mucous membrane; whilst the septum, in part destroyed, fell towards the right side, and totally obstructed the corresponding nostril. To remedy this defect, M. Lisfranc conceived the idea of detaching from each side of the nose a triangular flap of skin, the base of which was directed towards the mouth, whilst the summit remained attached, and being destined to serve as a pedicle, would correspond to the inner angle of the eye. These two flaps were to be dissected up, and being approximated, were then to be united in the median line of the nose (that was to be). The first step of the operation was to reestablish the anterior opening of the right nostril, which was effected by dividing with a bistoury the adhesions which produced the obliquity of the septum. The requisite incisions were then carried right and left on the cheeks: the first extended from three lines beneath and internal to the inner angle of the eye downwards and outwards, to the level of the inferior border of the nasal aperture. The remains of the folded and adherent skin were then dissected up from around this cavity, and were made even and pared in preparation for their union in the median line. A second incision then passed transversely from the inferior extremity of the former to the pared edges of the cicatrized margin, and separated the base of the flap from the upper part of the lip, and facilitated the dissection of this triangular flap of skin. The same manipulation was repeated on the opposite side, and after tying several small arteries, the two resulting flaps were united to each other by three points of suture, and served to form the end of the nose. The next step was to reunite the cheeks at the external border of each flap, in doing which it was found necessary to curtail the breadth of the lip by the excision of a triangular portion right and left. This part of the operation was effected by two incisions, of which one extended from the point of termination of the lateral incision obliquely downwards and outwards, and the other from some lines internal to the bleeding margin of the upper lip, and joined the termination of the first. Lastly, the cheeks were dissected up to a sufficient extent to favour their approximation to the external borders of the flaps, to which they were attached by three points of suture: two other points fixed the edge of the upper lip to the corresponding part of the cheek, and the operation was completed, with the exception of the formation of the septum, which was deferred till a later period." (Serre, p. 284 et seq.)

We have thought it right to give the details of the above operation, as illustrative of the 'méthode par déplacement' so much eulogized by M. Serre, not because we think it an improvement on the Indian operation, but to give our readers an opportunity of judging for themselves. We must acknowledge we should have anticipated, before looking to the end of the case, that the great drawback to which this operation would be obnoxious must be the necessary flattening, from the want of support, which is in a measure given by the twisted pedicle of the flap derived from the forehead, but more especially from the necessary after-contraction resulting from the loss of soft parts in the cheek. Let us turn then to M. Serre's comment on the case:

> "I am not," he says, "disposed to speak of M. Lisfranc's operation as exempt from all difficulty: I even feel it a duty to declare that the operation was only attended with partial success, and that the new nose has gradually become flattened."

He further suggests that "secondary corrections" might in such cases be advantageously had recourse to. And then, on the other hand, our attention is called to the opinion of M. Velpeau, that the Indian method is a dangerous operation, not unfrequently terminating fatally, as proved in the practice of Lisfranc and Dieffenbach, the latter of whom lost two out of six patients during his stay at Paris. We are not aware of such disastrous consequences having occurred to any of our countrymen; at least, all the cases which have come under our cognizance have been attended by partial or complete success; or at worst, by sloughing of the new-made organ. Before leaving this part of our subject, we cannot refrain from noticing a candid remark of M. Serre's, in which most impartial judges must concur:

> "I am acquainted with the successive improvements which Delpech, Dieffenbach, Lisfranc, Blandin, Labat, and many others have introduced in the mode of performing the rhinoplastic operation; but I cannot the less persist in saying that it appears to me there is exaggeration in all that has been written relative to the regularity of new noses, whatever may be the method adopted for making them. For my part, I have made my share, and I am not afraid to publish that I have never obtained, in this respect, such satisfactory results as I could wish." (p. 271-2.)

II. The mouth. The mouth-making department of our subject receives but a brief notice at the hands of our German authors, who appear entirely satisfied with the clever operation of Professor Dieffenbach, already detailed by us. The particulars of Dr. Mütter's case, in which he followed the Berlin Professor's directions are narrated in his pamphlet; and the satisfactory conclusion of the case was considerably enhanced by the entire failure, of the previous attempts, to remedy the defect by simple lateral incisions, although "tents were introduced to prevent the lips of the wounds from uniting. This appeared at first to be productive of some good, but in a short time they cicatrized and contracted, and the patient remained in as uncomfortable a condition as before." M. Serre likewise has a panegyric on this operation, which he acknowledges himself "forced to admit as the type of all that plastic surgery can offer of the ingenious and delicate;" yet he considers it as not without its drawbacks and inconveniences, which preamble of course prepares us (as usual, we are compelled to say,) for some criticism on and variation of his German contemporary's mode of proceeding. In the first place the idea of the operation is attributed to Werneck, who, it appears from Von Ammon's account, first proposed and adopted the plan of uniting mucous membrane and skin in extension of the mouth by lateral incisions, as early as 1817: in fact his operation was the same as that more recently practised by Diffenbach. But was M. Serre ignorant that the case in question was not published until 1830, and therefore cannot detract from the merit of originality due to the Berlin professor, whose operations were performed in the interim? If aware of this it is scarcely ingenuous or liberal to have concealed it. But now for the variation in the operation, which, if as successful, we are willing to accept as an improvement on account of its greater simplicity. It consists in a simple lateral incision, on either side of the mouth by which the aperture is extended; and the reunion without loss of structure, of the opposed borders of skin and mucous membrane: where the thickness and induration of the intervening tissues require it, a slice (tranche) of the soft parts may be removed to facilitate the completion of the operation by the application of the necessary sutures. This operation has likewise succeeded in the hands of M. Velpeau; the only advantage which the German has over this modification is, the rounded coral margin which the greater abundance of mucous membrane must give more perfectly.

III. THE CHEEK. The *meloplastic* operation, by which the partial loss of the cheek is renewed, constitutes a division of plastic surgery in which the so-named French method is peculiarly applicable. Von Ammon describes the operations of Graefe, Roux, and Dieffenbach, with criticisms upon each; and M. Serre deprecates the employment of measures which require any twisting of the pedicle of the flap; but as all these operations where loss of structure is involved, must be necessarily subject to modifications varying with the deficiency to be replaced, we shall pass by the comments and details of our European continental authorities, and confine ourselves to the illustration of what plastic surgery can do in this department by citing one of Dr. Mütter's cases.*

"In the month of March, 1842, A. T——, aged 30, applied to me for the relief of a distressing deformity, occasioned by the abuse of mercury. About six years before I saw her she had been most severely salivated for a bilious fever, and in consequence of ulceration attacking the right cheek, nearly the whole of this portion of the face was destroyed. To conceal the deformity she has been in the habit of keeping her face tied up in a handkerchief; consequently, but little motion being allowed the lower jaw, this partial rest of the organ, persevered in for more than six years, has produced a permanent contraction of the masseter muscles on each side, so that scarcely any motion exists in the temporo-maxillary articulations, and it is impossible to introduce any substance more than the sixteenth of an inch in thickness between the upper and lower jaw. Her speech is of course very much impaired, and all her food is reduced to the smallest possible bulk, or taken in the shape of liquids: her general health is excellent.

"The first indication in such a case was obviously to obtain as much motion in the articulations of the lower jaw as possible; and this could only be accomplished by increasing the space between the maxillary bones. To accomplish this, it was deemed best to divide the masseter muscles (the entire muscle on the left, and what remained of it on the right side), and then separate the bones by a lever of some kind. Accordingly, on the first Wednesday in March, that being the regular clinical day at the College, she was brought before the class, and the operation performed with a common scalpel, the muscles being divided from *within*, and the knife carried obliquely downwards. The wounds were dressed with dry lint, and on the second day the lever of Heister was employed to separate the jaws. Each day the screw was turned a thread or two; and, after a lapse of two weeks, the patient was enabled to protrude her tongue without difficulty,—a thing utterly impossible when the treatment was commenced;—and the space between the teeth, when the lower jaw is depressed, is nearly an inch. She has, of course, free motion in the part, and chews her food without much difficulty.

"The most difficult part of the treatment still remained to be accomplished, and on the 23d inst. she was again brought before the class, for the purpose of having this put into execution.

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* This case is well illustrated by different sketches.

"After carefully considering the different operations usually performed in such cases, I adopted the following plan: Having first extracted the useless teeth of the upper jaw, which, from their irregularity, would have materially interfered with the proper adjustment of the flaps, and, besides, by their sharpness, possibly caused ulceration and sloughing of the tissues forced against them, I proceeded to detach the integuments by which the opening in the cheek was surrounded. The edge of the scalpel was directed towards the bone, and the incisions carried sufficiently far to allow the margins of the wound to be approximated to a considerable degree. This callous margin, formed of the 'inodular tissue,' was then pared off with a bistoury, in order to obtain, if possible, union by the 'first intention' between the flaps. An effort was then made to close the wound by sliding the detached integuments, from all sides, towards the centre, but they refused to yield, and it became necessary to make other incisions. [These are exhibited in a sketch, and consist of two crescentic cuts above and below the wound, which meet in the centre of either margin.] By these incisions *four flaps* were formed, and detaching them carefully from the subjacent parts, we found no difficulty in uniting them at a line which indicated the longest diameter of the opening. The twisted suture was employed, and the wound presented, after their introduction, the appearance exhibited in Fig. 3. [Here the crescentic incisions above mentioned are gaping, and the fresh-pared margins in accurate contact.] To support the whole, one or two straps were passed over the points upon which there was most strain, and over all a thin pledget of patent lint was laid, and the patient placed in bed. The hemorrhage was comparatively trifling, but few arteries requiring a ligature; and the operation, though painful and tedious, was borne out by the patient without a murmur." (Plastic Operations, p. 21 et seq.)

We do not think it necessary to follow the details of the subsequent treatment in this case. Of its entire success we are assured by the representation of the patient's face in the concluding sketch; and it certainly does great credit to Dr. Mütter's skill and ingenuity, whilst it speaks powerfully in favour of the 'opération par déplacement.'

IV. The lips. Of all the defects we have alluded to, no one is more unsightly to the beholders and distressing to the unhappy subject of it than loss of the lips. The importance of these organs in articulation, mastication, retention of the saliva, &c., renders the defect in question deserving of the best attention of those who profess and practise plastic surgery; and that this claim has been regarded, the numerous operations proposed, and the large share of letterpress devoted to cheiloplasty in the works before us, (especially M. Serre's,) sufficiently attest. Of the various causes which give rise to the loss or deficiency of the lips, we may enumerate the following as the most prominent: wounds, ulceration of a scrofulous, herpetic, syphilitic, mercurial or cancerous character; burns; and, though rarely, congenital absence or imperfection. On a previous occasion we noticed the antiquity of the cheiloplastic operation, which owed its origin to the mutilations practised in India on malefactors of various grades. Our German authors supply us with ample materials were we so disposed to dilate on this subject; but this our space will not admit of, and we regret that we cannot do justice, within reasonable compass to Von Ammon's modifications of the operations he first details. M. Serre has evidently paid unusual attention to this part of our subject, and we shall therefore draw more largely upon him, whilst we also notice what the talent of our transatlantic contemporary has contributed towards the perfecting of this branch of the art. In M. Serre's opinion, cheiloplasty is the most advanced of all the plastic operations on the face, and that its details may be subjected to more fixed and definite rules, to which the variations according to existing circumstances may be referred. Delpech appears to have been successful in the restoration of the lips, but laboured under the disadvantage of deeming it a 'sine quá non' to have mucous membrane in its proper place, to obtain which end he doubly-twisted his flap in some instances, and thus doubly endangered the vitality of the transplanted skin. "Give me mucous membrane" said he, "to cover the border of my new lip, and there is not a defect which I will not undertake to remedy." So near are we sometimes to the discovery of a simple truth, when we are misled by previously acquired prejudices. This desideratum, however, of Delpech, has been literally supplied by the ingenuity of M. Serre, the peculiarity and advantage of whose operation consists in the retention of the mucous surface, which is dissected up from the diseased structure, and reapplied on that which is brought from a distance to supply its place. He combats the natural objection to this mode of operating, that with the mucous membrane you probably also transplant the seeds of the disease you have been labouring to root out, by referring to facts, and the results of his experience; now as facts in surgery are quite as stubborn as in any other branch of learning, and as we are neither in a position nor willing to gainsay the results of M. Serre's experience, we cordially welcome this addition to our knowledge, and congratulate him upon his success. Of course the advocate of this plan admits that it is inapplicable where the mucous surface is positively involved in the disease; and we think it right to add that though M. Serre claims and deserves a considerable amount of credit for the more extended introduction of this method of coating a new lip, the principle has been recognized by Von Ammon and others, though not so fully carried out. The first case illustrative of his plan of treatment, was one of cancer which had almost entirely destroyed the lower lip, with the exception of the mucous membrane; the tumour was removed and the new lip obtained by raising a square flap of skin from the chin and neck into the gap, where it was fixed by sutures; and the ancient mucous membrane having been previously dissected up, accommodated itself to its new alliance.

In like manner case No. 2 succeeded, though the irregularity of the disease, (which involved the left commissure of the mouth and a part of the cheek,) rendered the operation more tedious and complex; but the third case exemplifies the dreaded risk of return of the disease (cancer;) one of the angles of the wound gave way, and before means could be taken for remedying the accident, malignant ulceration commenced, and the patient quitted the hospital uncured.* The narration of this unsuccessful case had restored us to good humour with our tetchy author, when our equanimity is again disturbed a few pages further on, by finding him involved in a warm dispute with one of his own countrymen, M. Sanson, who had stirred up the bile of the Montpellier surgeon by claiming priority for Dieffenbach, in the very operation we were in the act of discussing. As regards the *principle*, we again repeat that it has long been recognized and acted upon by other surgeons, though we believe that M. Serre has a right to the merit of having extensively employed it in cheiloplasty; and, in proof of our assertion we cannot refrain from extracting a passage from our former article, though at the risk of being charged with conveying away the oyster for the benefit of a third party, whilst we leave the combatants a shell apiece; it is this: "We shall paraphrase our author's account of this operation, (for a new eyelid by Fricke;) premising that, when the condition of the conjunctiva is tolerably sound, it is dissected up from the remnants of the former lid, so as to be employed as a lining for the fresh one. Of course, the preexistence of any malignant disease, such as carcinoma, forbids this reservation, &c." This mode of operating was published by Fricke in 1829. But we must abstain from thus intermeddling with the disputes of others, and point our shafts of criticism for more useful occasions: before we leave the lower lip, we will fulfil our pledge of noticing a successful case of Dr. Mütter's, the plan of whose operation differs from that of most others that have been employed for similar deformities. The patient, a man 50 years of age, was the subject of a cancerous affection involving the entire lower lip, and the operation was performed in the following way:

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* The details of some of M. Serre's operations are difficult to render intelligible without the illustrative plates.

> "Having seated the patient in a favorable position, with his head supported against the chest of an assistant, I proceeded to the removal of the entire diseased mass, by a semi-elliptical incision, which started from the commissure of the mouth on one side, and terminated at a corresponding point on the other. From the centre of this line two slightly curved incisions [here there are references to a diagram,] were carried downwards and outwards, until they reached the base of the inferior maxillary bone. It is obvious that these incisions were separated from each (other) by a triangular piece of skin, the superior angle of which nearly reached the first incision. Then, from the terminal extremities of the (lower) incisions two others were carried upwards along the base of the lower jaw, until they reached a point opposite the initial and terminal points of the (first) incision. Two quadrangular flaps were thus marked out, and immediately detached from the subjacent bone. The hemorrhages having been arrested, and the patient allowed a few minutes of repose, the flaps were raised and placed in the position originally occupied by the lower lip, and there united to each other in the mesial line, and also by their lower thirds to the triangular piece of integument, by means of the twisted suture. By the elevation of these flaps a raw surface on each side was left to heal by the modelling process, or by granulation. The parts were dressed with the 'tepid water dressing,' the patient placed in bed, with his head elevated, and a rigid antiphlogistic system of treatment ordered. Nothing of interest in the subsequent management of the case presented itself; the parts healed kindly, and the patient recovered, without a trace of the disease remaining. More than two years have elapsed since the performance of the operation, and Mr. Lambert is perfectly well, and actively engaged in business." (pp. 31-2.)

This is a simple and nice operation, and preferable in our opinion, to the more serious incisions, &c., of Dieffenbach and Roux, (see our former article,) or the twisting of the pedicle of the flap, as practised by Liston. One remark naturally forces itself upon us here, which is that in this as in other cases there seems to be no inconvenience resulting from the absence of *real* mucous membrane, on the retention of which M. Serre lays so much stress: the simple explanation is that the surface which results from the healing process is so nearly allied to mucous membrane as to answer every purpose of that tissue; a fact which is but too familiar to surgeons in the analogous case of long-standing sinuses, the secretion of which so often becomes permanent, and of a mucoid character, requiring destruction of surface before a granulating process can be established.

In passing to the operation for renewal of the upper lip, M. Serre justly remarks that but little attention appears to have been given to it by authors who have treated of plastic surgery; in confirmation whereof we need merely to refer to the paucity of material which was afforded us in the compilation of the former paper devoted to this subject. We are therefore glad of the opportunity which our French author yields us of making good the deficiency in question, and shall accordingly avail ourselves of his cases to illustrate this division of our subject. The first case which is given in detail is one of considerable interest, and involving points of practice the importance of which are self-evident. The patient, a girl 17 years of age, was the subject of congenital double hare-lip, with division of the soft and hard palate, accompanied by great difficulty in deglutition and articulation. The incisive bone[*] and teeth, which were implanted in it, were very sensibly displaced in a direction forwards, as was also the fleshy median tubercle, which was elevated and directed forwards; the cleft of the palate was about three lines in diameter.

Before passing on to our author's operation in this case, we are tempted to notice a practical remark which he quotes from Dupuytren's 'Leçons Orales;' it has reference to the central appendage of skin which is remarked in these cases of double hare-lip. This excellent surgeon observes, "I have more than once had occasion to regret having left a deformity scarcely less than that for which I operated, by employing the central fleshy tubercle in the restoration of the lip.' This, it appears, necessarily results where the tubercle in question springs directly from the extremity of the nose; and the consequences attending these operations led M. Dupuytren to attempt the cure in the following way. Having separated the tubercle from its osseous attachment and dissected it up, it was raised horizontally and turned back so as to form a portion or the whole of the fleshy septum. The operation is then completed as in the case of a single hare-lip. It is only when the labial tubercle is inserted close to the osseous nasal spine that it should be retained as an integral part of the lip. But this by way of parenthesis.

M. Serre's operation may be epitomised thus: The two teeth which sprung from the "incisive bone" being removed, the greater part of the latter was likewise detached by two rectangular sections made with a pair of nippers. The next step was to appropriate the median lobule (which was attached in this instance to the extremity of the nose, and therefore useless for the lip,) to the formation of the septum; and this was effected by paring it to its proper size, and dissecting and turning it

[*] As this expression may not be familiar to all of our readers, we think it right to notice that it involves a point of questionable developmental anatomy. Béclard describes the superior maxillary bone as originally consisting of 1, a palatal; 2, an orbital and malar; 3, a nasal and facial; and 4, an incisor portion. The rapid ossification of this bone has prevented other anatomists from noticing this division; and Cruveilhier, amongst others, denies the separate existence of an incisive bone in man. It may be described as that portion of the palate which is immediately behind the incisor teeth, including the posterior margin of the alveolar ridge. We shall assume its existence.

back so as to be in readiness to be affixed to the surface of the section of the incisive bone. This being accomplished, the opposed edges of the lateral flaps were pared, and themselves separated, on a level with their junction to the gums, through their whole thickness, and to the extent of half an inch, with a view to facilitating their more ready approximation. The concluding step, before the application of the requisite ligatures, was a further separation of the natural adhesions between the retracted portions of the lips and the gums. In three weeks the patient left the hospital quite cured, "to the astonishment of all who had seen her before the operation, and unrecognized by the majority of her friends in her native place." M. Serre adds his regret that the palatal fissure was too wide to admit of reunion; "but the restoration of the lip had had the effect of materially improving the articulation." (pp. 152 et seq.)

The next case narrated occurred in the practice of M. Gensoul as early as 1830; and as we believe he was the first surgeon who carried into effect the modification by which it is characterized, we shall briefly refer to it. The patient was a young girl, 13 years of age, who had a congenital *double* hare-lip and cleft palate, as in the former instance; (we believe the latter is an almost invariable concomitant of the former;) there was further great prominence of the incisive portion of the superior maxillary bone, which projected beyond the lower jaw, and lateral portions of the upper to the extent of three quarters of an inch, so that the incisor teeth were directed horizontally forwards; lastly, the canine tooth and corresponding portion of jaw on the right side were likewise projecting forwards and outwards. The operation was as follows: The median flap was first dissected up, and held in this position by an assistant; the four incisor teeth were then withdrawn, and as the prominence of the bone was found so great as still to render the completion of the operation impracticable, M. Gensoul proposed, in the first instance, to excise the offending piece. But then, remarks our author, the patient would have been almost incapable of speaking without hissing, she would have been unable to spit out before her (!), and mastication would have been attended by inconveniences; under these circumstances the operator determined on the following plan: he seized the prominent bone with a powerful pair of forceps, and forcibly broke it and bent it back, the fracture extending to a level with the bicuspid teeth, and the fragment remaining suspended in its new relation by the palatal and pituitary membranes only. The right canine tooth was served in the same way without being removed: and the operation on the lip completed in the usual manner. The patient left the hospital in a fortnight, with the precautionary direction to confine herself to spoonmeat for a month; and the cure was ultimately complete. (Serre, pp. 161 et seq.)

In Dr. Mütter's pamphlet on 'Cleft Palate,' some observations occur, of which we may appropriately introduce a notice here. After classifying the congenital defects of the palate, according to their extent and the structures implicated, this surgeon remarks that where the whole palatine vault is divided, together with single or double hare-lip, he varies his management according to the age of the patient. "If called" he says, "a few days after birth, and the child is healthy, I operate for the hare-lip as soon as possible, believing as I do that the earlier the operation the better. Much needless dread of convulsions, sloughings, fevers, &c., exists in the minds of some, when they refer to operations of this kind upon very young children, but I have over and over again succeeded without the occurrence of an untoward symptom in infants of three, four, and five days old." Time, he thinks, is thus gained, the union taking place more rapidly, and the child prepared for its proper nourishment, no doubt a great desideratum; and (which is certainly a very interesting fact,) he has found "the influence exerted by the pressure of the cheeks and lips upon the maxillary bones, sometimes sufficient of itself to cause an entire closure of the fissure in the hard palate. The completion of the cure may then be left till the patient grows up. For projection of the maxillary bones he applies pressure with an instrument constructed on the principle of a truss, "the pad resting upon the bone, and the spring passing around the head, and so arranged as to retain its proper position without the risk of slipping:" a few days, or, at most, a few weeks will suffice to reduce the projection, and the ordinary operation may then be proceeded with. He has also found benefit from the employment (in very bad cases,) of a "small silver clamp, composed of two flat blades and a regulating screw;" for milder cases, the finger and thumb of the nurse may be introduced several times in the day, and the maxillary bones thus pressed together. The clamp has been found efficacious even at a few *years* old. The removal of the projecting maxillary bones by cutting forceps, Dr. Mütter deprecates, when it is practicable to accomplish the cure without it. Gensoul's operation he considers admissible and feasible in cases where the application of pressure would, from the age of the patient, be unvailable. In the comparatively rare cases of double palatine fissure he considers that very little can be accomplished by an operation, and that we must rely upon a plate of gold or platina for the closure of the openings in the palatine vault. (pp. 25 et seq.)

We regret we cannot find room for a detailed account of a satisfactory case under M. Serre's care in which a considerable cleft and deformity of the palate were remedied by continued pressure, exercised by means of "elastic levers," and constructed so as to press together the maxillary bones; but we must hasten to close this division of our subject by noticing the mode adopted by our author for restoring the upper lip after its removal for disease. One case was under treatment for fungus hæmatodes during three years, and after a series of operations was ultimately cured; but this is too long even to epitomise. In another case, a cancer occupying one half of the lip and extending to the nostril was removed, with the exception of the mucous lining and the free margin of the lip; a corresponding flap was then raised from the cheek on the same side, and after free separation from its surrounding connexions, was brought forward, (méthode par déplacement,) and fixed in its new position; after one or two little mishaps this case terminated satisfactorily. Another and still more extensive defect, resulting from the explosion of gunpowder, was remedied by a double flap which was united in the median line.

V. THE EYELIDS. The restoration of the eyelids is to be distinguished from the simpler but very useful operations for ectropium and entropium, which were indeed introductory to the former. The extent of mischief of course varies considerably in these cases, from the partial loss of one lid to the total loss of both; and the causes of these defects may be classified under much the same heads as those which necessitate the reproduction of lips, viz., congenital deformity, disease, or injury. In our former article we devoted some space to this portion of our subject, and then had occasion to notice favorably the contributions of Von Ammon, who seems to have devoted much attention to the blepharoplastic operation, and has illustrated his treatment of the defects in question largely by reference to his own practice; but as there is little of novelty presented to our notice, we must pass the details of both our authors summarily by, merely pausing to notice that M. Serre seems to have applied his French method to the cure of these cases with equal success as to other departments of the plastic art: we must also do him the credit to say that, without the same reserve and jealousy we have had so often to rebuke in the foregoing analysis, he candidly yields the palm to German surgeons, in having given the first impulse to this division of plastic surgery. We are also forced, by the already extended character of our "supplementary" article, to pass by M. Serre's operation for "restoration of the lacrymal sac,"* and conclude by noticing (as we promised on a former occasion,) Dr. Mütter's successful operations for the removal of deformity consequent on burns, and for fissures of the palatine vault.

VI. CICATRICES FROM BURNS. The principle which guided Dr. Mütter in his operations on contracted cicatrices is not entirely new, though he appears to have been unusually successful in its application. The method is essentially plastic (we use the word in its restricted sense,) in its nature. The unvarying ill success which has attended the attempt to remedy the defect in question by simple section or excision of the offending texture, led Dr. Mütter to undertake the more complex operation of transplanting healthy skin to the position occupied by the cicatrix; and to our best belief he is the first author who has made public the result of his practice in these cases. Many of the deformities alluded to are, however, by no means of so simple a nature as to be remediable by operation on the skin alone; the neighbouring muscles, if not primarily involved, become so secondarily, by accommodating themselves to their altered relations; such, for instance, as the sterno-mastoid in contraction of the neck, the adductors of the humerus and flexors of the forearm in burns involving the upper extremity; and this is an especially formidable obstacle to restoration of the part when the injury has been received in childhood, and the applicant for relief has since grown to puberty. Nay more, we have witnessed, when all these difficulties have been surmounted, a further and most troublesome obstacle offer itself in the vessels and nerves of the limb. It therefore behoves the surgeon well to consider every possible difficulty he may have to encounter, before he undertakes an operation which may inflict much suffering, and entail permanent mischief on the patient, without in any degree remedying the defect for which the operation was undertaken.

We gave a short abstract of Dr. Mütter's first case in a recent Number of our Journal; we will now again notice it in connexion with his others. Miss A. T. had, it appears, been the subject of a severe burn on the neck and throat when five years old, being upwards of twenty years prior to the date of the operation, 1841. Her life being despaired of at the time of the accident, she was permitted to lie in the position most agreeable to herself, and all medical interference was declined. As a necessary consequence the chin, cheeks, and face generally were drawn down and tied to the chest; the mouth was closed with great difficulty, and the right eyelid followed the skin of the face. But further there were other effects illustrating the power of a constantly operating cause in disturbing the normal growth of parts subjected to its influence: "the angles of the lower jaw were altered, and the incisor teeth nearly *horizontal*, by the pressure of the tongue, which organ, in consequence of the inability of the patient to close the mouth, was always visible, and indeed *protruded*, when she was silent." We have here copied the doctor's words, though we are disposed to question the justness of this explanation exclusively; the cause *we* alluded to was the traction of the skin attached to the jaw, which was, according to his showing, the reason why the mouth could not be closed; the pressure of the tongue probably aided secondarily to a trifling extent in producing the effect alluded to; though even this could not be the case when it was protruded, which was, it appears, its usual position. Still further, "the clavicle was so completely imbedded in the cicatrix, that it could scarcely be felt, and there was no external indication of its location. The chin, from the shortness of the bands, was drawn down to within *one inch and a half* of the top of the sternum, and the head consequently inclined very much. The space between the chin and sternum was also filled up by the cicatrix, so that no depression existed in front of her neck." Here indeed was a frightful condition, and one well calculated to test the ingenuity of the operator, and the value of the remedy. It would be difficult to do justice to the operation without transcribing the author's own account of it.

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* In fact, it presents but little for notice or analysis; the mode of treatment recommended being the favorite one by displacement.

"The patient being placed in a strong light, and seated on a low chair, her head was thrown back as far as possible, and sustained in this position by an assistant. Seating myself in front, I began by making an incision, which commenced on the outside of the cicatrix in *sound skin*, and passed across the throat into *sound skin*, on the opposite side. This penetrated nearly through the integuments, and was made as near the centre of the cicatrix as possible. It was therefore about three-quarters of an inch above the top of the sternum, and of course in the most vital part of the neck. My object in making it so low down was to get at the attachments of the sterno-cleido-mastoid muscles, which, in consequence of the long flexion of the head, were not more than three inches in length, and required on one side *complete*, and on the other *partial* division, before the head could be raised. The integuments having been thus divided, I next carefully dissected through the cicatrix until I reached the fascia superficialis colli, which I could readily detect, and then going on still deeper, I exposed the sterno-cleido-mastoid muscles of the right side, and passing a director under it, as low down as possible, divided both its attachments. This enabled me to raise the head an inch or two, but finding that it was still kept down by the sterno-cleido-mastoid of the *left* side I divided the sternal attachment of this muscle, and was much gratified to find that the head could at once be placed in its proper position, the clavicular attachment of the muscle offering little or no resistance. A most shocking wound, *six inches in length*, by *five and a half in width*, was thus made, and yet there was scarcely any hemorrhage; three or four vessels only requiring the ligature. The next step in the operation consisted in the detachment of a flap of *sound skin*, with which this chasm could be filled; for I knew very well, that if permitted to heal by granulation only, the patient, so far from being benefited, would be made worse than before. To obtain this flap, I commenced at the terminal extremity of the first incision, and carrying the scalpel *downwards and outwards* over the deltoid muscle, dissected up an oval piece of integument *six inches and a half in length* by *six in width*, leaving it attached at the upper part of the neck. This dissection was painful, but not bloody, only one small vessel being opened. The flap thus detached was next brought round by making a half turn in its pedicle, placed in the gap it was destined to fill, and carefully attached by several twisted sutures, to the edges of the wound. Several straps were then applied to support the sutures and, with the exception of its upper third, was completely covered in. A pledget of lint, moistened with warm water, was laid upon this raw surface, a bandage applied, by which the head was carried backwards and maintained in this position, and the patient put to bed." (pp. 5 et seq.)

This bold operation was followed by the most satisfactory results, motion being restored to the head, the mouth closed, and the traction on the cheek and eye removed. A series of illustrative diagrams accompany the description, and the contrast between the first and last is indeed great. We may just add that nearly the entire margin of the flap adhered by the first intention in its new position.

The next case was in some respects even more unpropitious than that just related. The patient was a girl 12 years of age, and the accident likewise a burn. "For nearly eight years she had been unable to turn her head to the left side, the lower lip was everted, and the chin drawn down nearly in contact with the sternum, whilst the front of the throat presented a rough reddish cicatrix." The operation in this instance was nearly identical with the former, and the success at least equal, if we may judge by the accompanying sketches. In the third and last case the cicatrix occupied a more central position, causing the near approximation of the chin to the sternum, complete eversion of the lower lip, and obliquity in the direction of the lower incisor teeth; a similar mode of proceeding was followed by a similarly favorable result. One interesting feature in connexion with these operations is, that the constitutional disturbance was very trifling and transient, a fact one would scarcely have anticipated *a priori*. We congratulate Dr. Mütter on these highly creditable and acceptable contributions to practical surgery; and turn, in conclusion, to his pamphlet on fissured palate.

VII. Fissure of the palate. There are few operations that have been long recognized and practised, in which surgeons have been oftener foiled than that for fissure of the palatine vault. The chief cause of this may perhaps be sought in the delicate texture of the membrane of the palate, and the necessary tension which accompanies the approximation of the edges of the cleft. Dr. Mütter's success, however, appears considerably to exceed that which has fallen to the lot of others; for we find him stating at the commencement of his paper, that "out of twenty-nine operations on the soft and hard palate which he has performed, he has failed to relieve the patient but in two cases; and that he has met with no dangerous symptoms in any case." This is, we think, unprecedented success; and we shall be doing our surgical readers good service by detailing the steps of our author's course of proceeding,—not, however, exactly holding his opinion that "reports of rare and successful cases are more for the benefit and instruction of the very young, than for the information of the older surgeons." He divides his operation into the usual stages of "denudation of the edges of the fissure, introduction of the ligatures, and approximation of the edges, and tying the ligatures;" and deprecates the practice recommended by some, of introducing the ligatures before the incisions are made,—the hemorrhage is easily arrested, he adds, by causing the patient to gargle with cold water. In freshening the edges, it is recommended to commence at the most dependent point; for, by making the section from below upwards, the blood will not obscure the parts. Under the several heads of "age, health, season, preparation of the patient, &c.," the following remarks occur. It is hardly safe to undertake the operation before the sixteenth or eighteenth year. The general health of the patient should be favorable, and he should be free from any disorder of the assimilative functions, and from any specific disease. The most favorable season is that which is least liable to atmospheric vicissitudes; the occurrence of cold or cough being disastrous to the operation. As a preparative step, Dr. Mütter has found much benefit result from "frequent introduction into the fauces and between the edges of the cleft, of the instrument to be used, or the finger of the surgeon or of the patient himself, by which the parts become, as it were, *familiarized* to the presence of foreign bodies." As a favorable effect of this precaution, in neither of the cases narrated in the pamphlet was it found necessary to introduce any foreign body to prevent the patients' mouth from closing, or their interfering by motion of the tongue. The needles should be well tempered to prevent their breaking, which has occurred, and the fragments have fallen into the œsophagus. The great after-difficulties are those which attend the desire for food, and especially the thirst; our author does his best to keep his patients without food for three, or two days at least, and then allows thin calf's-foot jelly or "what is known as cold custard or slip;" of this last article we do not know the British synonym. To allay the thirst the patient may be allowed the luxury of a wet sponge brought in contact with the roof of the mouth, or, at most, a teaspoonful of water "may be allowed occasionally to trickle down the throat;" this indeed requires no small share of philosophy. Again, any disposition to cough or sneeze must be scrupulously avoided, as tending, from the accompanying spasm, to interfere with the new relation of the parts; and the patient must be guarded against the desire to "clear the throat," which naturally springs from the irritation of the fauces. But now for the case.

The patient was a gentleman 25 years of age, in excellent health and very anxious for relief. The fissure, which was congenital, extended through the centre of the soft palate, and involved the posterior third of the palate bones. After the "preparation" noticed above, the patient was placed in a chair, and his head firmly supported against the chest of an assistant. The first step in the operation consisted in an assistant "inserting a sharp hook into the most depending angle of the left margin of the cleft," by which means the parts were made tense.

"I then inserted," proceeds Dr. Mütter, "the point of a thin *double-edged knife*, (the blade of which was one inch, and the handle six inches in length,) in the most dependent part of the margin, about a line from its free edge, and cut rapidly from *below*, *upwards*, inclining the knife so as to reach the apex of the cleft. When the apex was reached, the knife was changed from the right hand to the left, and Dr. Randolph (the assistant) passing the hand which held the hook, across and a little above the face of the patient, made pretty firm traction upon the slip of mucous membrane previously separated by the first cut, and which still remained transfixed by the hook; by this means the right margin was made tense. I then completed the denudation by cutting rapidly from above, downwards. The denudation of the margins occupied about a minute, and the patient was then allowed to rest. The hemorrhage was slight and easily controlled by gargling with cold water, and after the lapse of a few minutes the second step of the operation was commenced . . . The head being placed and firmly supported as before, and the mouth held open by the volition only of the patient, I passed a small curved needle, armed with a well-waxed double silk ligature, and firmly held in the grasp of Physick's forceps,* through the most dependent part of the left margin of the cleft, carrying the needle from before backwards, and inclining my hand to the left of the mouth, so as to throw the point of the needle, after it had transfixed the tissues, into the middle of the cleft. As soon as it was visible, Dr. Randolph seized it with a pair of long forceps, and the clamp of the porte being at the same time relaxed, by which the grasp upon the needle was kept up, the latter was loosened and at once withdrawn from the mouth. The same needle was immediately replaced in the porte, and the latter being held in the right hand, instead of the left, I introduced the needle on the right margin of the fissure, at a point as nearly opposite as possible the little wound in the left, passing it from behind forward. As soon as its point was visible, it was seized and drawn through, and thus the first ligature was passed. The patient was then allowed to rest for a few minutes, and then the second ligature was passed in the same manner; a third and a fourth were also required, and between the introduction of each there was a respite allowed, during which the patient gargled with cold water, took a little wine and water, and had the blood mopped away. The whole were passed in about fifteen minutes, and as the needles were detached from each, their extremities were carried out at each corner of the mouth, and held separate by assistants. The needles were all introduced from two to three lines from the margins. The third and last step was then undertaken, and we commenced it by tying the ligature first introduced, or that nearest the uvula. The first knot was easily made by crossing the ends of the ligature, wrapping them round the ends of the fore-fingers of each hand, and then passing the fingers as far back as possible. The edges came together beautifully, and with but little strain by slowly carrying the fingers outward, and then the second knot was made. While the ends were crossing for this knot, Dr. Randolph grasped the first with a pair of forceps, and held it until the second was completed. Lastly, the ends of the ligatures were cut off close, and the patient allowed to rest for a few minutes. The others were knotted in the same manner, and in thirty-five minutes the patient was in bed." (p. 3, et seq.)

We should have found it difficult to curtail the above case (albeit it possesses nothing strikingly novel or peculiar in its details,) without depriving it of the interest and value which it derives from the mode in which the different steps were conducted,—an interest which is so much enhanced by the fact already alluded to, of its being one of the nineteen successful cases in twenty-one. The only instruments, apparatus, &c., required consisted of "a knife, a hook, a pair of long forceps, a simple porte and needles, with waxed ligatures, scissors, sponges on handles, wine and water, cold water, towels, and two or three assistants." The only drawbacks in the subsequent course of the case were the giving way of one ligature and a tendency to slough at the spot: this was met by caustic solutions. The other ligatures were taken away on the fifth, sixth, and seventh days, and the cure (with the exception of a pin-hole opening,) was complete at the end of three weeks. The usual long duration of these operations (as compared with the above) Dr. Mütter attributes to the complexity of the instruments employed. One or two remarks on the after treatment we may append with advantage. Our author has often observed severe griping distress his patients; this he attributes to the quantity of blood swallowed during the operation, and has found the best remedy to be an enema repeated every hour till the blood is brought away, or, if requisite, an anodyne injection. If inflammation of the fauces run high, the most active antiphlogistic treatment is to be adopted, lest it should terminate in sloughing, or an extension of the inflammation to the lungs. Fatal cases have resulted from these causes, though they are rare. When the pared edges cannot be readily approximated Dr. Mütter approves of lateral incisions, as proposed by Dieffenbach to relieve the tension. An ingenious mode of treating small apertures in the palate is mentioned, and illustrated by two cases; the plan consisting in a combination of sliding the flap and of granulation; but for the particulars we must refer our readers to the original pamphlet, or the paper in the American Journal of Medical Sciences.*

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* A long, slightly curved, pair of forceps, which close with a spring.

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* As the valuable and very interesting paper on cleft palate, read by Mr. Fergusson, at the close of last year, before the Medico-Chirurgical Society, has not yet appeared in an authenticated form in print, it would be clearly beyond our province, as reviewers, to take any lengthened notice of it. It would, however, be injustice alike to the author of the paper and to our subject, if we did not furnish our readers with such a brief view of Mr. Fergusson's principles and practice in this case, as we can command; more especially as we regard the mode of operating proposed, though on a small scale, as one of the most ingenious and happiest applications of anatomical and physiological science to the art of surgery, that we have met with of late years. We take the following report of the contents of Mr. Fergusson's paper from the weekly journals of the day:

"The author commences his paper by making some general remarks on the operations for cleft palate performed in this country and abroad. He then proceeds to give a detailed account of a dissection which he had the opportunity of making, of the muscles which operate upon the soft palate, in an individual who had both the velum and a portion of the hard palate cleft. This description is followed by an examination of the opinions of different eminent physiologists, concerning the motions of the velum palati and its arches during the acts of deglutition, and by the author stating his own views as to the actions of the various muscles when the palate is cleft. This part of the subject he further illustrates, by describing four different states in which the flaps on each side may be seen, upon looking into the mouth of a person who has a cleft palate, and irritating them in different ways. By pursuing this course of anatomical and physiological enquiry, he arrives at the following conclusions: 1, that the flaps are slightly drawn upwards and to the sides, when the levator palati contracts; 2 that when the levator palati and palato-pharyngeus act strongly and together, the flaps are so forcibly drawn from the mesial gap, that they can scarcely be distinguished from the sides of the pharynx; 3, that the flaps are forced together, and the edges come into contact, when the superior constrictor muscle contracts during the act of deglutition; 4, that the circumflexus palati possesses but a feeble power over the flaps; lastly, the fibres of the palato-glossus were very imperfectly developed in the specimen in his possession. The chief object of his paper is to communicate a novel plan of operating in staphyloraphy, founded on the above investigations, and which he has put in practice with most satisfactory results in two cases during the last twelve months. The principle of his new proposal is to divide those muscles of the palate which have the effect of drawing the flaps from each other, and widening the gap between them when they contract, so that the stretched velum may be in a state of repose, and the joined edges may not be pulled asunder by any convulsive action of the parts during the process of union. In other words, he advises, as an accessory to the operation of staphyloraphy, the division of the levator palati and palato-pharyngeus muscles; and, if requisite, the palato-glossus. In bringing forward this plan, he reviews the different modes of operating which have been pursued by numerous distinguished surgeons who have written on the subject; and he concludes by entering into several

We have but little to add as a parting word to our different authors. Von Ammon's and Dr. Baumgarten's joint work possesses the characteristics common to most specimens of German medical literature, that of presenting a well arranged and sufficiently copious view of the branch of practice to which it refers. In spite of the morbid susceptibility and reclamatory style of M. Serre, which have so frequently called for our friendly criticism, there is much of simplicity and even candour which has been an agreeable relief to us in perusing his volume: of his merits as a surgeon we have a high opinion, and only wish we could persuade him, "et id genus *irritabile* omne," that it is by no means the surest mode of securing the public verdict in their favour, to be over-solicitous about their own fame, which is very apt to make their critics ill-natured, and their readers suspicious; but we are aware that we must set down much to the spirit of "la gloire de la grande nation," which burns in every Frenchman's bosom, and is so ready to burst forth into a consuming flame when stirred by national slights. Dr. Mütter's pamphlets are simple and, we may add, modest records of a success which we cannot quarrel with him for being justly proud of.

## Art. VII.

*A Practical Treatise on Midwifery.* By M. Chailly, Doctor of Medicine, Professor of Midwifery, &c. &c. Illustrated with 216 Woodcuts. *A work adopted by the Royal Council of Public Instruction.* Translated from the French and Edited by Gunning S. Bedford, a.m. m.d., Professor of Midwifery and the Diseases of Women and Children in the University of New York.—*New York*, 1844. 8vo, pp. 530.

2. *A Practical Treatise on Midwifery; exhibiting the present advanced state of the Science.* By F. J. Moreau, Professor of Midwifery, &c. &c. Translated from the French by Thomas Forrest Betton; and edited by Paul B. Goddard, a.m. m.d., Lecturer on Anatomy, &c. &c. With Eighty Plates, comprising numerous separate illustrations.—*Philadelphia*, 1844. 4to, pp. 236.

The activity of the American press in transferring to its own literature the best works of foreigners, as well by simple republication, as by the laborious process of translation, is universally known. We have a striking instance of this in the two volumes before us—two elaborate treatises on the same subject, translated by American physicians, and published almost simultaneously at the two great rival cities of the United States. We shall notice them separately, and in the order in which they reached us.

I. In our Journal for October 1842, we have already briefly considered M. Chailly's original work, and expressed our favorable opinion of its

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minute details regarding the steps into his own operation, and by describing the particular forms of instruments which he has found best adapted for his proceedings.

The preparation of cleft palate, a dissection of the parts in the usual condition of the throat, a variety of diagrams, instruments, &c. were on the table, to illustrate the views of the author." (Medical Times, Dec. 21, 1844.)

merits. Our notice of the translation will not, therefore, be much extended but we may advert to some statements and opinions of M. Chailly, which we have not previously commented upon, as well as to some of the brief additions made by the translator in the form of foot-notes.

In cases of procidentia of the funis, M. Chailly says, that when the orifice is completely dilated, and the contractions have attained a certain intensity, the accoucheur should introduce two or three fingers, and even the whole hand, if the condition of the external parts will permit, in order to push up the cord through the membranes: then profiting by an energetic contraction, he will rupture the amniotic sac, either with the hand introduced, or by means of an ordinary pen, carried along the hand supporting the cord, and pushed forward with the other: at the moment the fluid escapes, the head places itself exactly over the uterine orifice, while the cord, sustained by the extremity of the fingers, is carried above the superior strait, and is protected from compression. That this practice will always fail we do not assert or believe; but we do assert and believe that it will fail in the great majority of cases. The practice recommended by Dr. Michaelis of Kiel,* is, we think, more to be depended upon, and safer for the mother in the hands of average practitioners. It seldom happens that the prolapsus of the funis is discovered before the membranes are ruptured.

M. Chailly is one of the very few French writers who admit the propriety of opening the head of the living child, when the nature of the case would, without this expedient, expose the mother to great danger and perhaps destruction. We have never, for a moment, doubted the propriety and perfect morality of the principle which would guide the English accoucheur in such melancholy instances; and for the sake of suffering women, we are happy to find M. Chailly's influence exerted to remove the prejudices of his countrymen upon so important a point. He very wisely lays it down as a rule, that when we are driven to the distressing alternative of opening the head of the child to save the life of the mother, the opinion of several practitioners should be taken. This is desirable for the security of our own reputations, as well as due to the fears and feelings of the mother and her friends.

Perhaps there is no point in the practice of midwifery that has been more warmly discussed and less definitely settled than the exact degree of pelvic contraction that prevents us from extracting the child through the natural passages. M. Chailly is not very precise upon this point.

> "*The pelvis less than two inches.* In this case, we cannot think of extracting the child through the natural passages: for supposing even that the instrument could be introduced, it would then not always be possible to remove the child; and this removal would require immense efforts, which lacerate and bruise the organs of the mother, and expose her to nearly the same danger as the Cæsarean section. In this event, one of the two individuals would be sacrificed, and the other would have a very slight chance of life; while the Cæsarean operation saves (may save?) the life of the child, and leaves the mother nearly as many chances of safety as cephalotripsy." (p. 294.)

The instrument referred to by M. Chailly is the cephalotribe; but his arguments will apply with equal force to any of the instruments employed in this country for the same purpose, where there is only just room to remove the child by the natural passages, even if the practitioner is very skilful in their employment. Practical experience, and that alone, can convey to the mind a correct notion of the difficulties to the operator, and of the suffering and danger of the mother in such instances. Burns and others have offered very sensible remarks upon this subject. Dr. Burns very truly says that it ought not to be forgotten that it is one thing to extract, and another to extract safely, in extreme deformity. It is possible, after much exertion, to bring away the child, but every one must have seen the mother lost, in cases where the capacity of the pelvis was far from being reduced to the minimum. Sometimes the uterus is ruptured, sometimes the soft parts slough, but oftener the patient dies, either of peritonitis, or the belly swells without pain, and she sinks. We ought to be satisfied, not only that we can bring through the child, but that we can do so without so much violence as must, in all probability, kill the mother. "I question much if extreme cases be not as dangerous to the patient as the Cæsarean operation; certainly they are more painful."* We have seen three cases in which the child was removed by the crotchet, forceps, &c., in consequence of great pelvic contraction, all of which ended fatally. The operator was dexterous and patient; the suffering of the women during the operation was sickening to behold.

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* British and Foreign Medical Review, vol. I, p. 588.

In discussing the mode of employing the forceps, M. Chailly asks, "towards what part of the pelvis should the branches be directed? Should they be carried directly to the place they are intended ultimately to occupy? or should they be directed first to the posterior part of the pelvis to be afterwards brought to their proper situation by the hand, introduced into the maternal organs, and by a vibratory movement adapted to the handle of the instrument? I adopt this latter mode after the example of M. P. Dubois." (p. 311.) A very good practical authority, but here, we think, a fallible one. The translator "can see no advantage in this rule; but, on the contrary, trouble may arise from it. Suppose, for example, the head is in the pelvic cavity, and it becomes necessary to apply the forceps. If the head be situated directly in the pelvis, with either the occiput or forehead regarding the pubes, nothing would be easier than to introduce the instrument, taking the hand previously passed into the vagina as a guide, on the sides of the head at once, without previously carrying the blades to the posterior part of the pelvis. This latter procedure might result in injury to the scalp of the child, in consequence of the efforts made to bring the blades to the lateral portions of the pelvis. But, if carried to these points when first introduced, no such difficulty would follow." (Foot-note, p. 311.) Here it appears to us, that a comparatively trifling and not very probable objection to the mode of practice advocated by M. Chailly is adduced, while a much greater and more likely mischief from it is passed over, namely, injury to the soft parts of the mother by this "vibratory movement" of the forceps, which, as a general rule, ought to be and may be avoided by applying the blades of the instrument to the sides of the head of the child at once, if the mother is placed in a proper situation. We quite agree with the translator as to the impropriety, we would even say folly, of using the forceps secretly; the opinion we formerly† gave upon this point, is almost literally that which is embraced in Dr. Bedford's note at p. 315. Dr. Bedford might very safely have spared the long critical note at p. 316 upon Dr. Ramsbotham's opinions as to the use of the forceps. He is quite mistaken in supposing that Dr. Ramsbotham would "do nothing, because the ear of the child cannot be felt," as is clear from what he says upon the subject.* We object to the advice given by M. Chailly, of introducing the whole of the hand, except the thumb, into the maternal organs when we employ the forceps. As a very general rule, the introduction of one or two fingers between the head of the child and the soft parts of the mother is quite sufficient to guide the blade of the instrument safely. Again, we must be permitted to say that no assistant is necessary to hold the branch of the forceps that is first applied in its situation. He who possesses but even moderate dexterity, will be able very easily to keep the blade in its position by his finger and thumb, while he introduces the second blade. M. Chailly advises us, when we have applied the forceps, to "bind the handles strongly together by a napkin." This expedient is generally unnecessary, and often very injurious to the child, for the reason properly pointed out by the translator, that it keeps up a constant, severe, and sometimes fatal pressure upon the head. We can make sufficient pressure with our hand, and this power we can, of course, increase or diminish from time to time, according to the exigencies of the case we have to manage.

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* Burns's Midwifery, 8th edit. p. 468.

† British and Foreign Medical Review, October 1842, p. 372.

Upon another point, too, we agree with Dr. Bedford, and differ entirely from M. Chailly. The latter would perform the operation of turning without the consent of the patient, and would "carefully conceal from her the true nature of it." (p. 350.)

Dr. Bedford's advice is surely more judicious; first, that the necessity of interference should be impressed upon the patient's mind; and secondly, that what we are about to do should be frankly communicated to her. If the practitioner is kind in his manner, and judicious in his mode of thus acting sincerely with his patient, we are quite sure that ninety-nine women in a hundred will bear the pain of the operation with much more calmness and resignation than they would if they were kept in utter ignorance of what was doing or about to be done. M. Chailly, in common, as we thought with all other accoucheurs, would *not* grease the palm of the hand preparatory to turning, that he might have a firmer hold of the fetal limbs when he had grasped them: Dr. Bedford *would* do so, from the, in our opinion, imaginary fear, that the dry palm of the hand might come in contact with and injure the organs of the mother. The various steps in the operation of turning are rendered very clear to the student by the different woodcuts.

The cephalotribe, or compressing forceps of the head, invented by Baudelocque, nephew of the celebrated accoucheur, is regarded by M. Chailly as "a most precious instrument, which cannot be too positively defended against its traducers." In this country little or nothing is practically known of this instrument, the object of which is to supersede the use of the perforator and crotchet. We can readily believe M. Chailly's assurance, that "the firmest and most thoroughly ossified heads would readily yield under the pressure of this instrument;" but the most important question is, can the cephalotribe be used with as much safety as the instrument it is intended to discard? Mr. Cooke[*] tells us that there are eleven cases on record in which the cephalotribe has been used, and in all, he believes, with success. In all, too, the Cæsarean operation had been considered to be absolutely necessary from the impossibility which existed of delivering by the crotchet.[†]

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* Principles and Practice of Obstetric Medicine, by Dr. F. H. Ramsbotham, p. 329.

In cases where we may be compelled to leave some portions of the after-birth in the uterus, M. Chailly very properly advises us to examine the patient from time to time, and ascertain whether these portions are detached; and if they are, they should be removed by the fingers. To guard against the danger of the absorption of these putrefied masses, recourse should be had to vaginal injections of a weak solution of chloride of lime. But injections into the womb itself, which have been often recommended, should be used with great caution. M. Housman and others have reported cases in which serious accidents were occasioned by the passage of the fluid into the abdominal cavity through the Fallopian tube. M. Chailly observed a similar fact at La Clinique, from an injection thrown into the womb: the patient experienced a sudden pain in the right iliac fossa: all the symptoms of local peritonitis manifested themselves at this point; but they were combated, and the patient recovered.

One more point of practical importance we must advert to, because but little attention is paid to it in this country, and it refers to cases in which the life of the patient may be at stake, and in which even a temporary arrest of the danger may be of the utmost importance: we allude to pressure on the abdominal aorta before its bifurcation, in cases of hemorrhage after delivery. In conjunction with other and well known means, M. Chailly advises as follows:

> "While the accoucheur is making frictions on the hypogastrium, he should administer ʒj of ergot in a small quantity of water. At the same time, he directs the assistants to place cold compresses on the legs and thighs; and if the frictions should be insufficient to bring on uterine contraction, he must not wait for the action of the ergot, but immediately, with the extremity of the fingers of one hand, press on the abdominal aorta before its bifurcation; and he thus exerts with this hand, on which is superposed the other, a compression which, when well made, almost invariably arrests the hemorrhage.
>
> "This means, which we owe to M. Baudelocque—nephew, and whether he originated it or not matters little—is one of the most precious discoveries with which the obstetric art has been enriched.
>
> "M. d'Ornelas has quite recently cited in his thesis several cases of success obtained by this remedy.
>
> "My father had recourse to it once with the happiest result; and in two instances I have also been enabled to preserve the lives of two women, who certainly would have died had it not been for this valuable agent.
>
> "In one of these patients I made use of this compression for nearly two hours, when M. P. Dubois, whom I had sent for, arrived and witnessed the fact.
>
> "The effect produced by this compression is so manifest, that the flow of blood is immediately checked; and if, by a movement of the patient, the aorta should escape from the hand, the hemorrhage recommences immediately.
>
> "This compression, as is well understood, is not a curative remedy; but it permits us to gain time, a result the more important in an accident so fearfully rapid as uterine hemorrhage.

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[*] London Medical Gazette, vol. xvii, p. 14.

[†] The details of these cases will be found in Baudelocque's Mémoire sur le Cephalotripsie, and in the No. for April 1835 of Journ. de Méd., by Lucas Championniere.

"Finally, while this compression is faithfully persevered in, and the flooding is thus checked, we must employ, with activity, the other means which are calculated to arrest it definitively. Cold water should be thrown into the rectum; two or three drachms of ergot, in two or three doses; the cold compresses to the legs and thighs should be constantly renewed; and an assistant should make continued frictions to the uterus.

"The compression of the aorta will be the more easy in proportion as the patient is less loaded with fatty matter; but, even when the female is very corpulent, it still may be practised with facility and successfully. In fine, immediately after the expulsion of the fetus, the uterus descends, and there is a space between the fundus of this organ and the intestines, which, for a period of nine months, having been pressed up towards the superior portion of the abdomen, do not immediately after the delivery resume the place they occupied before pregnancy. It is into this space that the hand passes with facility for the purpose of making the compression.

"It is sometimes extremely fatiguing to continue this compression, and we are occasionally obliged to be relieved by an assistant." (pp. 475-6.)

We quite agree with Dr. Bedford that ergot should never be considered among the *heroic* remedies in the treatment of uterine hemorrhage after the birth of the child. Some practitioners are in the habit of relying on it, as an all-sufficient agent in these cases; but they are in error, for if the hemorrhage is profuse, the patient may die before the ergot can act. It does not fall within our province to describe the detailed management of such cases; suffice it for us to say, that any internal medicines can be little if at all relied upon.

We here close our notice of M. Chailly's work, and of Dr. Bedford's additions as the editor. If it were only for the fact of this work containing the opinions of one, certainly, of the best obstetricians in France, namely, Paul Dubois, it would have strong claims to all those who are interested upon practical subjects of midwifery; for one great merit of the work is, that no idle speculations are indulged in; it is practical, and therefore useful and instructive. Dr. Bedford's translation reads smoothly and well, and is, upon the whole, unusually free from the Gallicisms that translators from French to English so commonly introduce.

II. In the exposition of the subjects of which he treats M. Moreau has adopted the following order. In the First Part of the work he gives an explanation of the organs which concur, in any manner, in the accomplishment of the various functions of reproduction, pertaining to women alone. These organs are described, in their physiological state, and in a state of rest; in their physiological state, and during the performance of their functions; in the anomalies which they present, whenever these anomalies can modify, oppose, or prevent the execution of the functions peculiar to these organs. The subject of generation is left to treatises on physiology. In this we conceive the author has acted wisely and in keeping with the title of his work. A "practical" treatise on midwifery can scarcely, with propriety, do more than contain a very superficial, and therefore unsatisfactory, sketch of so extensive, so difficult, and at present—notwithstanding all the time and talent that have been expended on it—so unsettled a department of scientific inquiry. The Second Part of the work includes the study of the functions of the various organs, the structure of which is given in the first part. Part the Third is especially devoted to the various terminations of pregnancy; that is, to labour: to the distinctions between labours, and the numerous varieties they offer, either as terminating by the efforts of nature alone, or as requiring the interposition of art. In the Fourth Part the anomalies of pregnancy are considered, as its development, product, location, and termination. The Fifth and last division embraces an enumeration of the natural phenomena which supervene in the woman after delivery, and in the child at birth.

Such are the limits—and such the arrangement of the text of the present work. And in order to render the treatise as useful as possible, very numerous plates are added, of which after an attentive and even studious inspection, we can scarcely speak too highly, whether we regard their execution, or the happiness with which the various subjects for graphic illustrations are selected.

As the introductory parts of the work present no field for originality of description, we shall confine our notice of the volume to various points of practical moment that we have noted down as worthy of comment, and which are more or less peculiar to the author.

*Retroversion.* M. Moreau is surprised that Boyer, of well known talent and experience, has stated that retroversion of the uterus scarcely ever occurs in the virgin state. "We have observed it much more frequently in the empty uterus than during pregnancy." (p. 55.) That this displacement of the uterus may occur, from disease enlarging it to a certain degree, and therefore in the unimpregnated condition, we do not deny; but we are very doubtful of the fact of its having been found to exist "more frequently" in the empty uterus, and our assent to the statement, or the removal of our doubts as to some fallacy in the observation and diagnosis that have led to it, could only have been obtained by a very satisfactory account of cases in point.

From the difficulty we have experienced in replacing a retroverted uterus by manual assistance alone, we can easily conceive the advantage of the plan, in some cases, which M. Moreau mentions, and which he has found the most successful. It consists in placing the patient on one side, and introducing a rod, eight or ten inches long, furnished at one end with a tampon of linen well greased, into the rectum, in order to push the fundus of the uterus from below upward, whilst, with two fingers in the vagina, the os uteri is drawn downward and backward. This method originated with Evrat more than thirty years ago, and was adopted in the following case. A woman in the fifth month of pregnancy had retroversion of the womb. Various practitioners, Coutouly among the number, tried in vain to reduce it. M. Evrat, in the presence of his colleagues, placed the woman on her left side, introduced into the rectum the instrument described, while with two fingers in the vagina he seized the os uteri, and then moving his fingers and the rod in contrary directions, he restored, but not without difficulty, the uterus to its normal position. Notwithstanding the exertions used to reduce the organ, pregnancy was not interrupted and the patient was happily delivered of twins. And here we may observe that abortion by no means so necessarily happens, when the uterus has been retroverted, and even when some difficulty has been experienced in its reposition, as writers in general would lead us to believe. In five cases* that occurred to Hesse of this displacement, the patients went their full time.

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* Busch's Journal, Bd. 8, Heft i, p. 122.

*Inversion.* It has been often stated, that when that very serious accident inversion of the uterus has taken place, nature, from the influence of some accidental circumstance, has been known to effect, spontaneously, a reduction, until then regarded as impossible. As the facts in support of this assertion are far from numerous we give the following case from M. Moreau. De la Berre, a surgeon, having retired to a chamber near that in which his wife was about to be delivered, was suddenly called to her aid after the birth of the child. The midwife had completely inverted the uterus in endeavouring to extract the placenta, and thinking it was a false conception, attempted to pull it away, with the assistance of another matron as ignorant as herself. Ineffectual attempts were made at reduction. Serious hemorrhage took place and continued. Six months afterwards in getting out of bed, the lady fell on the floor. She felt at the moment an extraordinary motion in her belly accompanied by very acute pain, and followed by syncope. On recovering she found that the tumour had disappeared: the inversion was reduced. The fact was communicated to the Royal Academy of Surgery. A similar case happened to Baudelocque several years after. Osiander* we find confirms this fact. "In some cases," he says, "nature alone effects reduction when art has failed. I know myself an instance of this kind."

*The modifications of the uterine and fetal circulation during labour* are not usually very satisfactorily touched upon by obstetrical writers. We give therefore M. Moreau's explanation of these changes.

"The first effects of the uterine contractions are to determine the shortening of the fibres, the diminution and contraction of the parietes, and the universal decrease of the cavity of the uterus: therefore, these changes cannot take place without producing others in the reciprocal relations of the constituent parts of the uterus and contained ovum. The uterine vessels, being compressed, decrease, their caliber diminishes, and, as they cannot undergo a retraction equal to that of the uterine fibres, their direction changes, their flexuosities increase, and the circulation through the parietes of the uterus is evidently modified, diminished, and slackened. The ovum, embraced on all sides by the uterine parietes, which contract and tend to expel it, at first resists, is then detached, and at last yields to the impulsion: but, during the struggle between the ovum and the expelling power, the membranes and the placenta, being extended, pressed outwardly by the uterus, inwardly by the fœtus and the amniotic fluid, experience changes which it is important to examine.

The placenta, diminished by a double pressure, can no longer receive the blood and the materials which it drew from the mother: if it still receives the blood which comes from the fœtus, it cannot transmit it to the uterus; hence arise numerous modifications in the fœtal circulation, which vary infinitely according to the slow or rapid, feeble or vigorous progress of the process of labour. During the contractions the uterus allows a smaller quantity of blood to pass in proportion to the energy and continuance and degree of shortening of its fibres: it therefore follows that if, in the first contractions, which are generally feeble, some fluids pass from the uterus to the placenta, a period occurs at which all communication between these organs ceases.

The placenta, no longer receiving any fluids from the uterus, cannot return to it the blood proceeding from the umbilical arteries: this blood, the residuum of fœtal nutrition, analogous to the venous blood of the adult, unfit for the support of life, is then obliged to return to the fœtus in the same state in which it left it, that is, without having undergone the alteration it should have experienced in the placenta. The contraction ceasing, the circulation again takes place as before the commencement of labour, and continues in the same manner during the whole time that the fœtus remains entire. But when the bag of waters is ruptured, and the amniotic fluid discharged, the contractions become more acute, longer, and closer together: the relations of the uterus and placenta change again; the former has diminished in proportion to the extent of dilatation of its orifice and the quantity of fluid discharged. The placenta, flacid, soft, not retractile, cannot follow the reduction of the uterus, and folds on itself: its harmonious relations are at an end: in the interval of the contractions, it can no longer send blood to the uterus: then the placental tissue becomes congested, the vessels are filled and distended, and soon can no longer receive the blood contained in the umbilical arteries: the latter are engorged, in their turn, and can no longer admit that conveyed to them by the divisions of the aorta: the aorta itself, not being emptied, can no longer receive the blood sent by the heart, and so on, there gradually supervenes an irregularity and perplexity in the general circulation, and a congestion of the whole sanguine vascular system of the fœtus. If this state continues, visceral congestion ensues, the vessels are ruptured, effusions take place under the pericranium, or are more deeply seated, and death is frequently the inevitable result. The fœtus is then born with a swollen, tumefied, and livid face, resembling a subject asphyxiated by carbonic acid gas: in short, perfectly apoplectic. If the contractions, on the contrary, have been very slow and not energetic, the fœtus, receiving no blood and constantly sending it out, is exhausted, and exhibits a condition of paleness, softness, flaccidity, and more or less complete anemia.

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* Die Ursachen und Hülfsanzeigen der unregelmässigen und schweren Geburten. Zweite Auflage, 1833, p. 145.

These phenomena and their causes being known, a host of therapeutic indications may be thence deduced, applicable either to our conduct during the progress of labour, or to the child at its birth. Thus, it may be easily seen that under certain circumstances it will be useful to endeavour to retard the progress of the labour, in others to accelerate it: that, in some cases, the preservation of the child will be owing to the promptness with which blood is taken from it, and that, in others, its life can be saved only by husbanding the little that remains." (p. 104.)

We cannot altogether agree with our author as to the extreme facility, with which he thinks, that "false pains" may always be distinguished from those owing to uterine contraction, by their "location and characters," and that we "cannot mistake" the one for the other, "however little attention we may give them." True, that an experienced practitioner will rarely fall into mistakes upon the subject, but it is also true that an examination per vaginam is not seldom required to lead to a correct diagnosis. Again, the following statement does not accord with our experience—now of more than thirty years—nor with the general opinion of accoucheurs. "We believe we may say that this sign,"—the *show*—previous to labour, "is frequently wanting, for it *is scarcely ever observed except in primiparous women*, or in cases of rapid labour, or when the fetus is very large: under opposite circumstances it rarely occurs." (p. 145.) To the latter part of this statement we gravely demur.

*Presentations.* M. Moreau claims for himself, the by no means unimportant merit, of being the first publicly to declare that cases of face presentation ought to be included among those which can terminate by the efforts of nature alone: "at least we have advanced this opinion long before the publication of the works of M. Velpeau and Madame La Chapelle." (p. 151.) Be this as it may, we must still, not from mere courtesy, give to Madame La Chapelle* the credit of having, more satisfactorily than other writers, described very explicitly the mechanism of face presentations, and also of refuting the erroneous views of many who had before taught that such cases were almost necessarily accompanied by great difficulty, if not danger to the *mother.* We are vexed to find M. Moreau accusing Denman of wishing to establish it as a rule of practice, that in presentations of the superior extremities, the "spontaneous evolution" of the fetus might be depended upon. Denman never committed so great and glaring a blunder, as we have elsewhere shown. Will M. Moreau permit us, with much respect, to caution him against quoting the opinions of writers at second-hand. We know that this allegation against Denman has been frequently made by English as well as foreign writers, but we know also, that it is unfounded. Denman regarded the spontaneous evolution of the fetus as an occurrence that might happen, but not as one that could be looked for, with any degree of confidence, or as one that could at all justify a departure from the well known rule of practice, in cases of *transverse* presentations.*

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* Pratique des Accouchemens. Par Madame la Chapelle, tome i, p. 367.

We have another protest to enter against M. Moreau. The following sentence excited a smile and some astonishment. Need we say that it has not a touch of one very essential quality—what that quality is politeness precludes us from formally stating. "In England, women generally refuse to allow any examination during labour, and the accoucheur is sent for to be, as it were, merely a spectator of a process left to nature." (p. 160.) The ladies of the United States are also included in this accusation of excessive folly. Are we to infer, from the silence of the translator and editor, American physicians, that the charge is well founded?

M. Moreau rarely uses the *ergot* of rye. He considers it injurious in certain circumstances, and "that its action is neither so constant nor so efficacious as many suppose." (p. 163.)

*Obliquity of the uterus in labour.* In speaking of the anterior obliquity of the uterus, a practical point concerning the management of which there is much diversity of opinion, M. Moreau says,

> "The woman is to be laid on her back, with a cushion under the breech, in order to establish the parallelism between the axis of the uterus and that of the superior strait: the fundus of the organ is pushed upward, a finger introduced into the vagina, in order, in the interval of the pains, to seek the os uteri, which is found on a level with the promontory of the sacrum, and to draw it gently forward." (p. 167.)

In our opinion the much safer direction, so far however as regards the manual interference alone, would be, to trust to time and patience in such cases. Dr. Robert Lee says,† in reference to the practice advised by M. Moreau and others, "this is one of the many dangerous manœuvres described by writers which ought never to be thought of." The fact we take it is this: that in the course of some time after the practitioner has been drawing forward the os uteri, sometimes gently, and sometimes, as we know, with reprehensible roughness, from an exaggerated apprehension of the danger of this anterior obliquity, he finds the os uteri in a more favorable position, and prides himself upon the benefit he has conferred by his interposition, which is, however, in truth, to be referred to the gradual efforts of nature, which have remedied the malposition, as they almost always will, with time and patience, if the patient is placed on her back and the uterus is properly supported by a broad bandage applied round the body. We admit that there are some rare exceptions to this desirable termination, and examples are to be found in Baudelocque.*

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* Denman's Introduction to the Practice of Midwifery, 7th edition by Waller, p. 355.

† Lectures on the Theory and Practice of Midwifery, p. 245.

*Hemorrhage.* Of the use and effects of plugging the vagina in appropriate cases of uterine hemorrhages M. Moreau thinks highly, but he also thinks that sometimes the flooding may be so copious and so sudden as to justify the plan advised by Celsus, namely, forcible dilatation of the os uteri. This must always be a very fearful expedient; we can hardly conceive it to be the lesser of two evils, so long as we can plug the vagina and restrain the hemorrhage. At all events it is not a plan to be recommended in print, or even thought of in practice, without the absolute necessity for instant delivery is clearly established.

*Turning.* We are scarcely satisfied with the observation that in performing the operation of *turning*, "the manœuvre is best performed during the absence of pains." (p. 180.) The safer direction would surely be that the attempt to turn *must* not be made during the continuance of pains.

M. Moreau considers the use of the *cephalotribe* as liable to more objections than cephalotomy.

*Œdema of the labia.* We should object to the free incisions advised by M. Moreau in cases of œdema of the labia pudendi, rendering delivery difficult. Small punctures will be sufficient to let out the contained fluid. Large ones would be somewhat dangerous, because parts that are distended by œdema have lost their tone, their disposition to recover from injury; and therefore, free incisions would be apt to run into the very mischief we wish to avoid, viz. gangrenous sloughs.

*Bulk of the child.* M. Moreau is inclined to believe that a debilitating regimen of the mother may have a decided influence over the offspring, and that it may be properly enforced in certain cases with the view of lessening the bulk of the child. We doubt the fact, and he confesses he once was opposed to it.

*Extraction of the placenta.* M. Moreau regards the practice of throwing injections into the unbilical vein of cold water, or mixed with vinegar or alcohol, with the view of destroying adhesions between the placenta and uterus, and of exciting the contractions of the latter, both as uncertain and not altogether safe. For example,

> "The expulsion of the after-birth not taking place in a woman whose delivery had been perfectly natural, and traction on the cord having been ineffectually exerted, the physician in attendance injected some cold water into the umbilical vein. This injection produced no effect: it was repeated, but with vinegar and water. This time the woman almost immediately tasted the vinegar in her mouth; she was attacked with ptyalism and such an intense chill, that, during fifteen hours, it was with the greatest difficulty she could be kept warm. Nevertheless, as the after-birth was not expelled, we were sent for. We found the cord hanging in the vulva, and the placenta partly engaged in the os uteri, but not completely detached. We introduced our hand into the uterus, broke up the adhesions, and readily extracted it. All the symptoms ceased, the woman

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* L'Art des Accouchemens, 7e ed., t. i, p. 166.

recovered, and has subsequently had several children. This curious fact seems to prove to us that injections of acidulated water into the umbilical vein are not so exempt from danger as might be at first supposed." (p. 218.)

At the end of the work M. Moreau gives an interesting paper on perforation of the perineum, and on the passage of the child through this part, which was read in 1830 at the Royal Academy of Medicine. As it is short we shall extract the case which gave origin to it:

> "Madame D——, living in Paris, 19 or 20 years of age, pregnant for the first time, was delivered on the 3d of March 1815. Labour came on naturally, and followed a regular course; the child presented in the fourth position of the head; the os uteri dilated in five or six hours; the membranes were spontaneously ruptured. When the dilatation was complete the head descended without difficulty into the pelvic excavation; but, when on the point of escaping through the inferior strait, it had great difficulty in passing under the arch of the pubes. During a very acute pain, M. Evrat, thought that he felt the middle of the perineum corresponding to the palms of his hand, lose its thickness and elasticity, and yield sensibly to the pressure of the child's head. He was reflecting how he could prevent laceration of the perineum, which appeared to him on the eve of occurring, when a violent pain, the effect of which he could not oppose, expelled the child, but in such a way that the head, instead of escaping per vias naturales, passed through the perineum, leaving in front the posterior commissure of the vulva, and behind, the orifice of the anus, uninjured. The irregular wound resulting from this perforation extended to the right, in the direction of the ascending ramus of the ischium and descending of the pubes; anteriorly, beyond the posterior commissure of the vulva, and posteriorly, wound slightly around the anus; then it passed transversely from right to left, between the anus and vulva, nearly as far as the tuberosity of the left ischium. A finger introduced into the anus assured us that the intestine was not comprised in the laceration." (pp. 228.)

The treatment of the case was almost left to nature, and in five weeks the patient was perfectly cured. She became subsequently pregnant, and was safely delivered, with "only a slight laceration of the fourchette."

Thus we conclude our notice of M. Moreau's work. If it should be observed, that we have selected more passages and opinions to differ from than to praise, we answer that such has been our object; but in looking at the work as a whole we are inclined to speak of it in the highest terms, as one well adapted for the instruction of its readers and as equally well supporting even the high reputation so deservedly enjoyed by its author; and, without meaning to say that the pleasing appearance of a book is as good a letter of introduction as that of man or woman, we still think that a volume like this, so handsomely "got up" and splendidly and very plentifully illustrated, has attractions that most determined readers will properly appreciate and feel the comfort of, and that even their zest for its study is increased by good print and good paper. The translator appears to have well executed his task. The text reads smoothly and more unlike a translation than most transferences from one language to another.

## ART VIII.

1. *Instruction pratique sur le Magnétisme Animal.* Par J. P. F. DELEUZE.—*Paris*, 1825.

*Practical Instruction on Animal Magnetism.* By J. P. F. DELEUZE.—*Paris*, 1825.

2. *Du Magnétisme Animal en France, et des jugements qu'en ont portés les sociétés savantes, avec le texte des divers rapports faits en* 1784 *par les commissaires de l'Académie des Sciences, de la Faculté et de la Société Royale de Médecine, et une analyse des dernieres séances de l'Académie Royale de Médecine, et du rapport de M. Husson; suivi de considérations sur l'apparition de l'Extase, dans les traitements magnétiques.* Par ALEXANDER BERTRAND.—*Paris*, 1826.

*On Animal Magnetism in France, and the Decisions which Learned Societies have made with respect to it, with the Text of the different Reports made in* 1784 *by the Commissioners of the Academy of Sciences, of the Faculty and of the Royal Society of Medicine; and an Analysis of the last Sessions of the Royal Academy of Medicine and of the Report of M. Husson; followed by Considerations on the Manifestation of Extacy in Magnetic Treatment.* By A. BERTRAND.—*Paris*, 1826.

3. *Isis Revelata: An Inquiry into the Origin, Progress, and present State of Animal Magnetism.* By J. C. COLQUHOUN, Esq. Advocate, F.R.S.E.—*Edinburgh*, 1836.

4. *Untersuchungen über den Lebensmagnetismus und das Hellsehen.* Von Dr. JOHAN CARL PASSAVANT.—*Frankfurt am Main*, 1837.

*Researches on Vital Magnetism and Lucid Vision.* By Dr. J. C. PASSAVANT.—*Frankfort*, 1837.

5. *An Introduction to the Study of Animal Magnetism.* By the Baron DUPOTET DE SENNEVOY.—*London*, 1838.

6. *Histoire Académique du Magnétisme Animal, accompagnée de Notes et de Remarques critiques sur toutes les observations et experiences faites jusqu'à ce jour.* Par C. BURDIN, Jeune, et FRED. DUBOIS (d'Amiens).—*Paris*, 1841.

*Academic History of Animal Magnetism, accompanied with Notes and Critical Remarks upon all the Observations and Experiments hitherto made.* By C. BURDIN and F. DUBOIS.—*Paris*, 1841.

7. *Facts in Mesmerism, and Thoughts on its Causes and Uses.* By CHARLES CALDWELL, M.D.—*Louisville*, 1842.

8. *The Zoist: A Journal of Cerebral Physiology and Mesmerism, and their applications to Human Welfare.*—*London*, 1843-4.

9. *Neurypnology; or the Rationale of Nervous Sleep, considered in relation with Animal Magnetism. Illustrated by numerous Cases of its successful application in the Relief and Cure of Disease.* By JAMES BRAID, M.R.C.S.E. M.W.S. &c.—*London*, 1843.

10. *Manuel Pratique de Magnetisme Animal; exposition méthodique des procédés employés pour produire les phénomènes magnétiques, et leur application à l'étude et au traitement des maladies.* Par ALPH.

TESTE, Docteur en Médecine de la Faculté de Paris, Membre de plusieurs sociétés savantes.—*Paris*, 1843.

*Practical Manual of Animal Magnetism, with a Methodical Exposition of the Processes employed to produce the Magnetic Phenomena, and their application to the Study and Treatment of Disease.* By A. TESTE.—*Paris*, 1843.

11. *Facts in Mesmerism, with Reasons for a dispassionate Inquiry into it.* By the Rev. CHAUNCY HARE TOWNSEND, A.M. late of Trinity Hall, Cambridge.—*London*, 1844.

12. *Letters on Mesmerism.* By HARRIET MARTINEAU.—*London*, 1845. 12mo.

13. *Medical Report of the Case of Miss H—— M——.* By T. M. GREENHOW, Fellow of the Royal College of Surgeons of England, &c. —*London*, 1845. 8vo, 1845.

14. *Human Magnetism; its claims to dispassionate inquiry. Being an attempt to show the utility of its application for the relief of human suffering.* By W. NEWNHAM, M.R.S.L. &c.—*London*, 8vo, 1845.

WE do not rank with those who would decry the investigation of any probable or possible truth, because it may have sustained the admixture of error or folly, or because it may have been associated with charlatanry and deceit. Almost every branch of knowledge has, at one period of its history, been subjected to some degrading alliance. Astronomy, for ages, was yoked with astrology; chemistry was little more than the handmaid of alchemy; and practical medicine has ever been degraded by the wickedness and imposture of some of its professors. Such a state of things may be observed in well-nigh every department of human inquiry. The records of history abound in falsehood and exaggeration; and subjects the most sacred have been and are disfigured and perverted. A combination of error and truth, indeed, would seem to characterize most matters on which the human understanding exercises itself. Let this unhappy association, however, be as intimate as it may, we conceive that there is thereby furnished no just motive for rejecting the truth because of the error. It is for us rather to examine, search into, and try to determine the actual amount of the true, whereby we attain a better position from which to reject, and confute, and render powerless, the false.

It is with these sentiments that we propose to ourselves a brief investigation of the existing pretensions of ANIMAL MAGNETISM, or MESMERISM. In proceeding to prosecute this task, we shall, in the first place, advance the reasons which, in our judgment, urge a dispassionate examination of the subject; secondly, we shall point out the kind of evidence we deem necessary for the establishment of each class of the alleged phenomena; and we shall then proceed to discuss the question of their validity.

It is Bossuet, we believe, who somewhere affirms that every error is a truth abused; and it has been most wisely said, that commonly there is to be found a truth at the bottom of any *honest* extravagance. Would it seem unreasonable, to believe that the same observations might apply to the subject, the discussion of which we now approach? Is not Animal Magnetism, however encompassed with error, the abuse of a truth rather than an absolute fiction? And, whilst contemplating the huge pile of nonsense, fancy, and fable, to which writers on this subject direct our attention, many of them in good faith, may it not be possible to detect some truth at the base? We hesitate not to assert our own conviction that it is so; and in the course of this article, we shall develope the facts and the reasonings which have led us to such a conclusion.

We think that mesmerism has hardly received fair play at the hands of many of our professional brethren, or in the pages of some of our contemporaries. Its pretensions, to some extent, however, are too well supported both by the number and the respectability of the witnesses, to justify an opposition made up almost exclusively of ridicule and contempt. Preposterous enough, doubtless, are many of the statements we are doomed to encounter in the perusal of mesmeric books; yet some of the facts recorded in these publications, and seemingly well authenticated, possess a wide range of interest, regarded in many points of view. But, independently of this, when it is considered, that men like Cuvier, Laplace, Hufeland, and Treviranus, have not refused their testimony as to the reality of some of the facts of mesmerism, we hardly think it right to dispose of the whole question, unexamined, by the facile process of a self-complacent *poo-poo!* It is true that contempt is the feeling naturally excited by the mighty airs of effrontery with which the ultra-mesmerists do, at times, advance even their most outrageous propositions, with taunts, ever ready, about persecution, Harvey, and Galileo! Nevertheless, we think it better, as a matter both of justice and policy, to disregard all the superimposed folly and imposture, and dispassionately to investigate the actual physiological facts and their true relations, with a view to discover, if it be possible, their nature, the extent of their novelty, and the practical inferences to be legitimately deduced from them.

We ourselves entertain not the slightest bias or prejudice upon either side of the question. We have at no time resolved that the thing could not, or should not, be so.* We have never pursued or examined the subject with an appetite predisposed by wonder for the too-ready reception of novelty; and, at the present moment, if we rightly appreciate our own mental condition, we have no *feeling* whatever upon the subject. Within the last few years, we have at various times dipped into mesmeric literature, and we have also witnessed a reasonable amount of mesmeric facts; but we have never gained a prepossession by prosecuting the matter as a *special study;* nor, indeed, have we instituted, excepting incidentally, any experiments of our own. We have, simply, as dispassionate lookers on, as unprejudiced observers of what has fallen in our way, attempted the formation of an accurate judgment upon what we have seen and read; and our conclusions, in the sequel, we shall lay before the reader.

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* The following extract from the concluding portion of our former article on Animal Magnetism, published six years since, (No. XIV, April, 1839,) will show the spirit in which we have always viewed this subject. "Our object has not been to give expression to our feelings, but to present to the reader's consideration an historical record, which may be reflected upon with some benefit. Neither would we be so far influenced by the impostures occasionally practised under the name of magnetism, as wholly to deny that some of the phenomena, from time to time produced by all aspirers to the art, seem to result either from some principle heretofore unknown and not yet correctly designated, or from some modification of recognized principles in the animal economy which cannot yet be accurately limited or defined. The whole of man's existence is too mysterious, and he is surrounded by too many things utterly beyond his comprehension, to justify an obstinate disbelief of things hard to be understood. In the constant attempts of the human intellect to penetrate the thick curtain that hangs all around it, doubtless some transitory glimpses of hidden truths are now and then accorded to quick intellects and peculiar organizations; and there is ever much more in heaven and earth 'than is taught in our philosophy.' The temporal guides of man, however, are his senses and his reason; and when he lays claim to a wisdom and to powers which are incapable of being made palpable to the one or explicable to the other, although we may not presume to say that he cannot possibly be right, he must expect that we make very diligent use of our own senses and our own reason in the investigation of his evidence; and industriously endeavour to untwist the double chain of truth and fancy, which he would fain twine round our puzzled understandings."

The facts of mesmerism, as set forth by systematic writers, fairly permit of their division into two very distinct classes: one includes phenomena which, if true, do not violate any recognized analogy of nature; and the other comprehends circumstances which contravene, seemingly at least, every admitted experience of the past and the general judgment of mankind. Instances of the former kind—the *ordinary* manifestations of mesmerism—are represented as being of frequent occurrence, and as almost producible at pleasure, and thereby accessible to every inquirer; so that, with respect to their reality, any competent observer may come to a decision by personally examining them; and to this course, where practicable, every one is plainly bound, before an opinion upon the subject can justly be given. The *extraordinary* phenomena are stated to be comparatively rare, and not to be generally accessible; and, in the investigation of these, a scrutiny of the evidence is usually the only resource which is left.

In dealing with the testimony relating to any branch of this subject, the rule, of course, is to be followed which would be deemed admissible in the investigation of any other philosophical question. The method of induction can alone lead to satisfactory results. The nature of the individual facts must be accurately appreciated, their authenticity must be carefully sifted, and the mental character of the witnesses must be rightly understood; in a word, correct premises must supply the materials for truthful inference. We do not think that mesmerism can justly be dealt with by a mere appeal to principles already admitted. So long as any proposition comes recommended to us in a manner implying no actual contradiction to some known fact, we do not see how any supposed natural law can philosophically enforce its rejection, even should it seem directly opposed to principles hitherto regarded as fixed and established. A *law of nature* can only be deduced by observation of natural operations; and when any novel fact arises, opposed to what had previously been deemed a fixed principle, the terms which express it must sustain modification, and not the fact itself receive a denial. But, maintaining this position most rigorously, we must insist upon the rule that evidence, tendered in support of whatever is new, must correspond in strength with the extent of its incompatibility with doctrines generally admitted as true; and that where statements obviously contravene all past experience, and the almost universal consent of mankind, any evidence is inadequate to the proof, which is not complete, beyond suspicion, and *absolutely incapable of being explained away.*

We hold that, here, it is not necessary always to *prove* the accuracy of an explanation offered; the facts of the case are not always cognizable; it is enough that, in the case supposed, some phenomenon shall *allow* an interpretation which brings it into harmony with antecedent experience, for the opposite view to be rejected as *unproved.* Guided by these canons, we shall proceed to examine the pretensions of mesmerism, with a view to attain some accurate conception of the existing state of the question, and of the estimation in which it should be held by the members of our profession.

It must be kept in mind that some of the asserted facts of mesmerism are distinct from, and do not necessarily lead to, the theories invented to explain them; that is to say, certain reported phenomena may be real, and yet the notion of animal magnetism be unsupported. Before we conclude, each of these points shall receive consideration; our first object, however, before discussing the question of *specific* influence in mesmerism, will be an analysis of the statements made with respect to the facts, and an attempt to make out the physiological or pathological character appertaining to them.

The effects following the mesmeric processes are various, according to the constitutional temperament of those upon whom trials are made; the most susceptible being, most commonly, young women whose nervous systems are mobile and *impressionable.* It is set forth on all hands that in a great majority of instances, no apparent result follows; and that, of the minority susceptible, a considerable number experience little more than drowsiness, or common sleep. Sometimes, however, there is said to supervene a state of coma; at others, exaltation, depression, or some anomalous modification of sensibility; and, occasionally, a state somewhat approaching to that of reverie, wherein the individual, although conscious, feels incapable of independent exertion, and spell-bound, as it were, to a particular train of thought or feeling. The occurrence of convulsive action, and of muscular rigidity, is described as taking place in some cases to a greater or less extent. These results are said to constitute the *simpler phenomena* of mesmerism. We shall illustrate them by some extracts from accredited writers upon the subject.

> "In this peculiar state of sleep, the surface of the body is sometimes acutely sensible, but more frequently the sense of feeling is absolutely annihilated. The jaws are firmly locked, and resist every effort to wrench them open: the joints are often rigid, and the limbs inflexible; and not only is the sense of feeling, but the senses of smell, hearing, and sight, also, are so deadened to all external impressions, that no pungent odour, loud report, or glare of light, can excite them in the slightest degree. The body may be pricked, pinched, lacerated, or burnt; fumes of concentrated liquid ammonia may be passed up the nostrils; the loudest reports suddenly made close upon the ear; dazzling and intense light may be thrown upon the pupil of the eye; yet so profound is the physical state of lethargy, that the sleeper will remain undisturbed, and insensible to tortures, which, in the waking state, would be intolerable." (Dupotet, p. 36.)

The above concise sketch corresponds very closely with what is laid down in other works of mesmeric repute. A few brief quotations exhibiting this correspondence we subjoin. The first we take from Deleuze's 'Practical Instructions,' wherein he states that "the magnetisee feels the necessity of closing the eyes; his eyes are so sealed that he cannot open them; he experiences a calm, a feeling of comfort; he becomes drowsy; he is put to sleep." Teste, another writer of distinction, speaking of the physical insensibility, says, "it exists, not only in the skin, but in the subcutaneous tissues, in the muscles, and even in the nervous ramifications." Dr. Passavant of Frankfort, an author often referred to, avers as follows: "As an especial effect of the power of animal magnetism, results the magnetic sleep. This is mostly deeper than ordinary sleep, the mediation of the senses is yet more decidedly suspended. The sensibility can so have vanished in a moment, that the loudest sound, the brightest light, even bodily injuries, are not perceived in this sleep." Indeed, all the authorities seem to coincide very much in their accounts; and, this we say, after referring to Chenevix, Elliotson, Townshend, Gauthier, Foissac, and others.

In mesmeric literature, innumerable records of cases will be found exemplifying what has just been adduced. We shall here extract the particulars of two or three of these, as being at once among the most striking and the best authenticated. In the 'Lancet' for December 9th, 1837, the following account appears from the pen of Dr. Sigmond:

> "I was enjoying the hospitality of a most amiable family in Fitzroy square, when animal magnetism became the topic of conversation, *and I related the trials I had already made. One of the young ladies proposed to become the subject of experiment*, to which I very willingly assented; for, having on former occasions attended her during momentary sickness, I was fully aware of the natural strength of her constitution, and the absence of that nervous temperament which renders this system totally inapplicable. I began what are technically called 'the passes.' They, as is not unusual, excited laughter and incredulity. I proceeded for about five minutes, and then stopped and *inquired if any sensation were produced*, and the answer was 'a slight sleepiness,' and ridicule was again thrown upon the subject. I recommenced the manipulations; I observed the eyelids falling, and at last they closed; but, as the same incredulous smile remained, I persevered for three or four minutes, when I, almost doubting whether any influence had been produced, inquired what the feelings were, to this no answer was returned. I found my young friend was in the most complete trance I had ever witnessed as the result of my magnetism. The stupor was the most profound; and I then tried the usual means to arouse her, but they were vainly exercised. After a few minutes, I found the hands become icy cold, the face lost its natural hue, and became perfectly pallid; the extremities became quite cold; the respiration was imperceptible; the stimulus of light did not affect the eye; on speaking to her, a faint smile was excited, and a quivering of the lower jaw, which seemed to indicate a wish but an incapacity of answering; the pulse became gradually feebler, whilst the external appearance altogether bore such a decidedly deathly cast, that naturally some apprehension was excited amongst her family by whom she was surrounded. I placed the perfectly unconscious subject of this distressing scene in a horizontal position, and directed the application of warmth and of friction to the extremities. Circulation and animal heat were gradually excited, but she presented a most singular appearance of suspended animation. In this condition she remained more than four hours, for I had commenced a little after ten in the evening, and it was about half-past two, that, on some slight effort being made to rouse her, she uttered some of the most piercing shrieks I have ever heard; there were convulsive efforts to raise the limbs; the face, too, became convulsed; she opened her eyes and stared wildly around; she was placed in the upright posture, and seemed sensible. Advantage was taken of this circumstance to carry her to her apartment; before, however, she could reach it, she fell into a profound

slumber, but its character was more natural. She was placed in her bed, appearing perfectly composed; the countenance had acquired its natural hue; the respiration was perfectly easy, and the pulse natural. In this state, she remained during the whole of the day, until nine o'clock in the evening, once only opening the eyes, and addressing a few words to an anxious and affectionate sister. In the evening, the young lady joined her family perfectly restored to her wonted cheerfulness. She expressed no complaint whatever."

Two recent histories, most probably fresh in the memory of some of our readers, constitute striking illustrations of alleged physical insensibility, so much dwelt upon by writers on the subject of our present discussion. We refer to the cases of amputation of the thigh during the mesmeric sleep, set forth as having occurred without the knowledge of the patients, who, during the operation, were stated by themselves, and considered by others, to have experienced no sensation whatsoever. The first of these occurred in the practice of Mr. Ward, of Wellow in Nottinghamshire, in the month of October, 1842, and is authenticated by himself, and Mr. Topham, a barrister of the Temple. Some particulars of this case we proceed to give. It was described by these gentlemen, in a paper readbefore the Royal Medico-Chirurgical Society, and afterwards published as a pamphlet, as "one of very extensive ulceration of the cartilages of the knee-joint, of four and a half years' standing; the consequence of neglected inflammation of the synovial membrane." We shall enter into no detail of the preliminary treatment here pursued, but shall go at once to the account furnished of the amputation, ultimately decided upon: the statement is in the language of Mr. Topham, who acted as mesmeriser in this instance.

"At half-past one o'clock, we proceeded to Wombwell's room, to make the necessary arrangements. From the suffering inflicted by the slightest movement, it was found impossible, without needless torture, to place him upon a table. The low bed, on which he then lay; was therefore lifted upon a temporary platform. Ten minutes after being mesmerised, he was drawn, by means of the bed clothes beneath him, towards the end of the bed. The movement, however, excited that pain which had so often aroused him before; and now it did so again. There was something quite excruciating in the suffering which the state of the knee produced; for I had seen him, whilst in mesmeric sleep, pricked to some little depth, in other parts of the diseased limb, without being disturbed or conscious of it. To preclude the necessity of any further movement, his leg was now placed in the most convenient position which he could bear. Shortly afterwards, he declared that the pain had ceased; and I again mesmerised him, in four minutes. In a quarter of an hour, I informed Mr. Ward that he might commence the operation. I then brought two fingers of each hand gently in contact with Wombwell's closed eyelids; and there kept them, still further to deepen the sleep. Mr. Ward, after one earnest look at the man, slowly plunged his knife into the centre of the outside of the thigh, directly to the bone; and then made a clean incision, round the bone, to the opposite point, on the inside of the thigh. The stillness, at this moment, was something awful: the calm respiration of the sleeping man alone was heard; for all other seemed suspended. In making the second incision, the position of the leg was found more inconvenient than it had appeared to be; and the operator could not proceed with his former facility. Soon after the second incision, a moaning was heard from the patient, which continued, at intervals, until the conclusion. It gave me the idea of a troubled dream; for his sleep continued as profound as ever. The placid look of his countenance never changed for an instant; his whole frame rested, uncontrolled, in perfect stillness and repose; not a muscle or nerve was seen to twitch. To the end of the operation, including the sawing of the bone, securing the arteries, and applying the bandages,—occupying a period of upwards of twenty minutes,—he lay like a statue. .... Finally, when all was completed, and Wombwell was about to be removed, his pulse being still found very low, some sal volatile and water was administered to him; it proved too strong and pungent, and he gradually and calmly awoke.

"At first, he uttered no exclamation; and, for some moments, seemed lost and bewildered; but, after looking round, he exclaimed, 'I thank the Lord to find its all over!' He was then removed to another room; and, following immediately, I asked him in the presence of those assembled, to describe all he felt or knew, after he was mesmerised. His reply was, '*I never knew anything more; and never felt any pain at all; I once felt as if I heard a kind of crunching.*' I asked him if that were painful? He replied, '*No pain at all! I never had any, and knew nothing, till I was awakened by that strong stuff,*' (the sal volatile.) The 'crunching,' no doubt, was the sawing his own thigh-bone."

These statements are fully borne out by the written account of Mr. Ward himself, appended to that of Mr. Topham; and the case, so authenticated, received at the time a variety of corroboration from other quarters. Before we remark on the credibility of this narrative, we shall supply the leading particulars of the second case, which occurred in the practice of Mr. Toswill, of Leicester. The account we subjoin is from the 'Leicestershire Mercury,' of August 31st, 1844, and copied by us from the 'Zoist' of the succeeding October.

"The patient is a young woman of the name of Mary Ann Lakin, 16, Fleet-street, in this town, who had been afflicted with a disease of the knee-joint for four years. The precise nature of the disease we do not know; but it was attended with enormous swelling of the limb, and with such excruciating pain as to prevent anything like consecutive rest for a long period............ As amputation of the diseased joint was deemed essential by her medical attendant, it was decided that the operation should be performed while in the mesmeric state. Accordingly, twelve o'clock on Thursday morning was fixed upon for the operation to take place. Mr. Hollings was the mesmeriser, and Mr. Toswill the operator, besides whom were present Dr. Shaw, and Messrs. Paget, Seddon jun., Downing, &c. Mr. Hollings having mesmerised the patient, which was accomplished in about nine minutes, Mr. Toswill proceeded to perform the operation. The limb was taken off within about five inches of the hip-joint, the spot measuring thirty-three inches in circumference where the amputation took place, and which was effected in two minutes and a half. During the operation an all but inaudible moaning was heard, and a slight movement of the body was perceptible; but, as far as could be judged, there was an entire absence of pain. This was evinced by the countenance preserving throughout the greatest placidity, not a single motion of a muscle indicating such sensation. On being demesmerised, the patient was not aware what had taken place, till informed by those in attendance."

The above statements have been further detailed and substantiated in the written accounts of Mr. Toswill, Mr. Downing, and Mr. Hollings. Dr. Shawe and Mr. Paget demurred somewhat to the conclusion, that the operation had been painless; all, however, concurred in the statement, that the patient *professed* to have felt no pain. There ensued some controversy on the matter, which may be seen in the number of the *Zoist* from which our extract has been taken. A perusal of this controversy, however, will not remove the impression that there did, very probably, exist some remarkable modification of sensibility in this instance.

Facts in many respects analogous to the above we have ourselves frequently witnessed. We have, for instance, seen great nervous disturbance, apparent sleep, and suspension of sensibility to occur under the mesmeric operations; and, with every disposition in the world to ascertain any existing deception, we have failed in the attempt. We have said that we have seen the induction of insensibility; at any rate, we have witnessed an entire absence of all indications of feeling under circumstances most likely to call them forth. We have seen a needle thrust deeply under the nail of a woman sleeping mesmerically, without its eliciting a quiver; we have seen pungent snuff in large quantities passed up the nostrils, under the same circumstances, and no excitement produced, until the patient was roused, many minutes afterwards; we have noticed an immunity from all shock, when percussion-caps have been discharged suddenly and loudly close to the ear; and we have observed a patient's little finger in the flame of a candle, and yet no indication of pain. In this latter case, all idea of there having been courageous dissimulation was removed from our mind in seeing the same patient afterwards evince both surprise and indignation at the treatment received; as, from particular circumstances, a substantial inconvenience was to result from the injury to the finger, which was by no means slight.

Now, that some such results as those which have been exemplified in the accounts of Dr. Sigmond, Messrs. Ward and Topham, and Mr. Toswill, and in those supplied by our own experience, do now and then really follow the mesmeric processes, it is, in our opinion, a much easier matter to allow, than to explain how different men, of acknowledged high character, of different places, at various times, and with every motive for guarding their own reputation jealously, should either be themselves so utterly deceived in a matter of simple observation, or, still more, should coincide in the intention to deceive the world upon this subject. It may, indeed, be contended that the statements themselves are of so extraordinary a character as to be absolutely incredible, even on the testimony of one's own senses. But this is a conclusion so outrageous, that it can be only justified by proof of the most incontrovertible kind. Before admitting its justice, we shall therefore subject the matter in question to the method of investigation proposed a few pages back; inquiring, in the first instance, into the nature of the asserted phenomena, with a view to determine the extent of their novelty, or incompatibility with past experience; and then attempting to decide as a matter of evidence, the question of their truth or falsehood.

Every one conversant with practical medicine knows well enough that a vast variety of bodily derangements occur, the chief seat of which would appear, from the symptoms, to be in the nervous system, of a character little appreciable as to their intimate nature, and upon which morbid anatomy sheds no light; we allude to that anomalous class of maladies commonly represented by the term HYSTERIA. It is true that, from the comparative frequency of certain forms of hysterical disease, some pathologists would persuade themselves that it is not, after all, so very obscure in its pathology, but that we really do know something definitive about the whole matter; but any one who shall consult the writings of the most practical and scientific will see nothing but discrepancy and dispute; and it will be found that some of the soberest heads virtually acknowledge that we know indeed very little upon the subject. Now, in this capacious, ill-understood group of diseases, will be found constantly included cases in close correspondence—judging from their recorded symptoms—with the mesmeric examples given in the foregoing pages; and a like correspondence will be noticed in the general descriptions of this class of diseases supplied in standard writings on the subject. Thus, Dr. Conolly, in his classical treatise published in the 'Cyclopædia of Practical Medicine,' states that, "in some cases, the hysteric fit consists of temporary or partial loss of power, or a palsy of some of the voluntary muscles—sometimes of those of the voice, and sometimes of all the voluntary muscles of the body, and the patient falls into a state of coma; is insensible; the face is flushed; the pulse beats regularly, even firmly; the respiration is calm and profound; and neither the sensibility nor the power of voluntary motion returns for several hours." Let the following from the same treatise be compared with the alarming features displayed in Dr. Sigmond's case: "The functions of the heart and lungs may be so seemingly suspended, and the coldness so great as to present the image of death;" further on, "there may be rigid spasm of several of the muscles, especially of the limbs." In the article, *Hysteria*, in Dr. Copland's 'Dictionary,' it is observed, "in a few instances the paroxysms change their character, and assume the form of *catalepsy*;" and, in treating of this latter functional aberration, Dr. Copland says, "in the more complete seizures, sense, intelligence, voluntary motion, and consciousness are entirely abolished; but, in some instances, the abolition is only partial; the patient being conscious, but incapable of moving or speaking."

Who, vaguely acquainted with mesmeric literature, would not suppose, in reading these extracts, that we were quoting from some of the works, the titles of which we have prefixed to this article? The accounts, for the most part, will apply alike to a large proportion of mesmeric cases, and to the forms of disease discussed by these learned authors, and more or less familiar to every practitioner.

It would unnecessarily preoccupy our assigned limits, to adduce many instances in illustration of what we have taken from Drs. Conolly and Copland. We will, however, supply some particulars of three or four, which will be allowed to exhibit much similarity with the cases of the mesmerists. The following example of what we will term, for want of a better designation, *hysteric* trance is related by Dr. G. M. Burrows, in his 'Commentaries on the Causes, &c. of Insanity;' in its leading features, it very much resembles the instance of *mesmeric* trance, related by Dr. Sigmond. It was the case of a young woman in whom the catamenia having been suddenly suppressed, a state of active mania ensued, on the subsidence of which she fell into the condition described below:

> "She became a perfect statue; sensation and volition were quite suspended; the evacuations were discharged involuntarily; mouth open, and saliva flowing from it in large quantities; a constant sardonic grin; the eyes immovable and imbedded in the upper eyelids; every limb retained the position in which it was placed, even the most painful, and that for a time impossible to be preserved by any one in health. The pulse was soft and slow........... At last, she rose one morning, in possession of every faculty, mental and bodily. She voluntarily assisted in domestic affairs, and talked rationally and cheerfully. She had a perfect recollection of most things prior to the attack of catalepsy; but, from the accession of that affection, all was a blank."

The above account is taken from one of Dr. Laycock's papers on hysteria, published in the 49th volume of the 'Edinburgh Medical and

Surgical Journal;' and a case very similar in many respects is related by Dr. Gooch, in the 'Medical Transactions:' an abstract of the paper occurs in Good's 'Study of Medicine,' from which the subjoined extract is taken. The symptoms displayed themselves in the puerperal state; the patient having, a few days before, given birth to a dead child. The following is in the language of Dr. Gooch:

"A few days after our visit, we were summoned to observe a remarkable change in her symptoms. The attendants said she was dying, or in a trance. She was lying in bed, motionless, and apparently senseless. It had been said that the pupils were dilated and motionless. But, on coming to examine them closely, it was found that they readily contracted when the light fell upon them; her eyes were open, but no rising of the chest, no movement of the nostrils, no appearance of respiration could be seen; the only signs of life were her warmth and pulse; the latter was, as we had hitherto observed it, weak, and about 120; her fæces and urine were voided in bed.

"The trunk of the body was now lifted, so as to form rather an obtuse angle with the limbs (a most uncomfortable posture), and there left with nothing to support it. Thus she continued sitting, while we were asking questions and conversing, so that many minutes must have passed.

"One arm was now raised then the other, and where they were left, there they remained; it was now a curious sight to see her, sitting up in bed, her eyes open, staring lifelessly, her arms outstretched, yet without any visible signs of animation; she was very thin and pallid, and looked like a corpse that had been propped up, and had stiffened in this attitude. We now took her out of bed, placed her upright, and endeavoured to rouse her by calling loudly in her ears, but in vain; she stood up, but as inanimate as a statue; the slightest push put her off her balance; no exertion was made to regain it; she would have fallen, if I had not caught her.

"She went into this state three several times. The first time it lasted fourteen hours; the second time, twelve hours; and the third time, nine hours; with waking intervals of two days after the first fit, and one day after the second." (Vol. iv, p. 614. 3d edit.)

With respect to the two cases of amputation recorded as having taken place during mesmeric coma, we shall not insist upon the fact, that the patients sustained the loss of limb in a state of *perfect* unconsciousness, although we imagine that it will very generally be admitted that there did exist some unwonted depression of sensibility. Assuming, however, that a degree of coma did really obtain in those cases, the following instance will constitute their analogue, and that also of many other mesmeric facts; it is related by Dr. Cooke, in his 'Treatise on Nervous Diseases:'

"A lady about 20 years of age, who had usually enjoyed very good health, was one morning found in a state of profound but quiet sleep, from which she could not be awakened, although the preceding evening she had gone to bed apparently quite well. Various means had been tried, with a view of exciting her from this state, but in vain. Under these circumstances, I recommended cupping in the neck; and after she had lost a few ounces of blood in this way, she opened her eyes, perfectly recovered, and remained through the day quite free from all symptoms of disorder. The next morning, and for several successive mornings, she was found in a similar state, from which she was recovered by the same remedy, no stimulating external applications producing any good effect. As she was considerably weakened by repeated depletions, it was determined that, on the next recurrence of the paroxysm, the case should be left to the efforts of nature, as long as was consistent with safety. The experiment was tried; and, at the end of about thirty hours, she spontaneously awoke, apparently refreshed, and wholly unconscious of her protracted sleep. On the future returns of these paroxysms, which were frequent, the same plan was adopted, and she awoke, after intervals of thirty-six, forty-eight, and, on one occasion, sixty-three hours, without seeming to have suffered from want of food, or otherwise." (Vol. i, p. 372.)

It will be noticed in the above account, that it was only after the loss of some ounces of blood that the patient awoke from the lethargic sleep; and that the circumstance was dependent, apparently, upon the depletion sustained, rather than upon any pain inflicted by application of the scarificator.

The subjoined account of a case very much resembling those which have preceded, is taken from Duncan's 'Medical Commentaries,' and is related by Dr. J. Fitzpatrick of Dublin; in this instance, we have the sudden and spontaneous coming on of utter insensibility to external stimulants, with many of the outward appearances of death, the patient being in fair average health up to the moment of the attack.

"Mrs. G— P— was a full woman, about the age of thirty-five. She was the mother of several children; but, at the time of her illness, was not pregnant. She had not been so well for some time before with respect to ........... as formerly, as it had gradually diminished for some periods. But in other respects she was in perfect health.

"In this situation, as she was standing at a table, with some clothes in her hand, she suddenly, without making any sort of complaint to a maid then in the room, inclined forward, and remained in that position for some time. The maid's curiosity induced her to stir her mistress, on which she seemed to fall, or incline still more over the table, but did not, in any respect, resist the maid. This surprised the maid very much, and finding her mistress both speechless and motionless, she called for the assistance of the other servants, who endeavoured to rouse her by the vapours of hartshorn, vinegar, and the like, but to no purpose. She was then laid on a bed, a vein was opened, but not a drop of blood was discharged. In vain did they endeavour to awake her; and after spending near two hours in a variety of treatment, they laid her out for dead.

"Several hours had elapsed from the time of the attack before I saw her. Upon entering the room, I was told by a clergyman, that all was over, for that she had been dead for more than two hours. After having asked several questions with respect to the attitude in which she was first discovered, I concluded that the original attack was cataleptic . . . . . . The first thing which I thought necessary was to raise her hands, and having found them in such a state as to remain in any position in which I placed them, I had no longer the least doubt of the existence of a real catalepsia. I instantly loosed her legs, and every other structure which had been placed about her chin and breast. I removed the cold sheets, and ordered her to be wrapped in warm blankets. I directed that two girdles should be warmed, one of which was to be introduced under the shoulders and back, and the other lower down. Hot bricks were likewise applied to the soles of her feet; and her body, legs, and arms were rubbed with very strong spirits and mustard. I applied eau de luce and strong hartshorn to the nose. I introduced volatile spirits as far down the throat as I could by means of a female catheter. But all these measures, though frequently repeated, were to little purpose.

"Having tried these active remedies, together with the other agents mentioned, and not being able to discover either pulsation or breathing, excepting, as I imagined, a slight tremulous motion of the heart, my hopes were almost at an end. But I was determined to persist, in order, if possible, to relieve her . . . . . . After perseverance for an hour, she showed evident signs of being affected. In less than two hours she opened her eyes. She attempted also to speak, but could not articulate . . . . . . Her recovery went on gradually, and after it was completed, she told me that, for some time before I came, she had a knowledge of what the attendants were doing about her. But she had not, in the smallest degree, the power of using any joint in her body, of speaking a single word, or of opening her eyes. When they were accidentally opened, she could not see; so that she might be considered as completely passive." (vol. x, p. 242.)

If the identity be admitted, according to our showing, of certain mesmeric manifestations with anomalous nervous diseases, we are justified in maintaining that, so far at least, the only novelty about them consists in the mode by which they are produced; for example, that, whilst in hysteria the exciting cause of the pathological condition is mostly internal and spontaneous, in mesmerism it is artificial and designedly applied. Now, though here there may be a novel fact to some extent, there would not seem to be any incompatibility with past experience; for all analogy would suggest that what may arise from an internal or inappreciable cause, may possibly enough, under circumstances of predisposition, be brought about by outward and artificial agency. A quick pulse, palpitation of the heart, headach, diarrhœa, and other abnormal states, will commonly enough originate *ab intra;* and yet they may be induced artificially: thus, alcohol will quicken the pulse, sudden surprise will cause palpitation of the heart, headach and diarrhœa may be created in a variety of ways; and so we take it to be with the phenomena of mesmerism now under consideration: they may have their origin spontaneously, or artificially; constituting, in the latter case, no *speciality*, but merely the superinduction of certain states of the system which occasionally arise as disease.

If this view be correct, where is the insuperable difficulty in admitting the validity of *some* of the mesmeric facts—of those which are so attested, that, if they referred to another matter, they would never be doubted? The cases related by Drs. G. M. Burrows, Gooch, Cooke, and Fitzpatrick, pass unquestioned; why should not those, in their main particulars at least, of Dr. Sigmond, Mr. Ward, and Mr. Toswill, as well as many others equally well authenticated? We conceive ourselves to have disproved, or, at any rate, to have weakened, the allegation, that an *extraordinary* accumulation of testimony is required, on account of their *incredible* character. We do not doubt of the abundance of false cases, yet we are intimately persuaded that true ones are to be met with; and an indefinite amount of imposture, being but negative, can never invalidate the proof positive.

In consideration of all these circumstances, and for the whole of the above reasons, we think it is proved—or, to say the least, we think it to be made in the highest degree probable—that *there is a reality in the* SIMPLER (THE HYSTERIC) PHENOMENA OF MESMERISM; meaning hereby the *sleep*, *coma*, *altered sensibility*, *spasm*, *or temporary paralysis of muscles*, *&c.*, as provoked in certain constitutions by the magnetic manipulations; and that, at any rate, as the evidence stands, no good reason exists for rejecting them.

We have next to consider a higher and more complex order of results, stated to ensue in mesmerism; we allude to the development of SOMNAMBULISM, OR SLEEPWAKING, as it has been more suitably designated. The spontaneous origin of this phenomenon has in all ages been attested; and its occasional occurrence, as disease, is admitted by all the world. The particular inquiry to which we are now led, in our progress, would seem to be—what are the phenomena truly developed in somnambulism? After we have determined this question, we can more appropriately proceed to estimate the testimony in favour of the possibility of creating such a condition by artificial, or mesmeric, agency.

All writers on mesmerism regard the induced somnambulism as a stage of development in advance of what, for the sake of convenience, we have designated the *hysteric* phenomena; and, in this respect, a conformability is discovered between the mesmeric speculations and the statements of scientific writers on what we have regarded as the correspondent nervous derangements. "In a few instances," says Dr. Copland, "the paroxysms (of hysteria) change their character, and assume the form of *catalepsy*, *extacy*, or of *somnambulism*........... The attack may commence either as a slight or as a severe hysterical fit, and pass, in a short time, into the cataleptic or extatic state; or it may begin in the form of extacy, catalepsy, or somnambulism, and pass into the hysterical convulsion."

Before adducing cases in illustration of the somnambulistic state, we propose the subjoined formula, as defining the principal phenomena characteristic of this remarkable phasis of human existence: *A condition in which certain senses and faculties are suppressed or rendered thoroughly impassive, whilst others prevail in most unwonted exaltation; in which an individual, though asleep, feels and acts most energetically, holding an anomalous species of communication with the external world, awake to objects of attention, and most profoundly torpid to things at the time indifferent; a condition respecting which, most commonly, the patient, on awaking, retains no recollection; but, on any relapse into which, a train of thought and feeling related to, and associated with, the antecedent paroxysm will very often be developed.*

As illustrating the above singular state, and exemplifying the phenomena affirmed in the above definition, we shall supply a few cases of spontaneous somnambulism recorded by good and respectable authors.

The following instances are narrated by Gassendi, as occurring within his own experience, in the eighth book of his Natural Philosophy, sixth chapter, and third section. The cases are adduced, generally, by writers on somnambulism, including Bertrand and Prichard; and they are always referred to as genuine and authentic. They seem to furnish illustrations of exaltation of the visual faculty, compensating, as it were, for the torpor of others. Not having the work of Gassendi by us at present, although we have read the narrative in his work, we take the following account of his cases from the work of Muratori.*

"One John Ferod, well known to Gassendi, was accustomed to rise in his sleep and dress himself; he opened the doors, descended into the cellar, drew wine, or did some other such thing. Sometimes even he would apply himself to writing; and, what is very curious, although he did all this in the dark, he appeared to see as clearly as if it had been day.

"He (Gassendi) relates also that a certain Riporto, a countryman of his own, once rose in the night, and, on stilts, passed over a neighbouring torrent whilst greatly swollen; but, awaking on the opposite bank, he dared not repass it, until it was light, and the waters had subsided."

We take the following account from Dr. Prichard's 'Treatise on

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* Della Forza della Fantasia Umana. Trattato di Lod. Ant. Muratori.

Insanity and other Disorders affecting the Mind.' The case exhibits, amongst other circumstances, the patient "awake to objects of attention, and torpid to things at the time indifferent," and may suggest a rational explanation of *magnetic relation*, to which we shall advert in the sequel.

"Castelli, a sleepwaker, whose case is one of the most remarkable, was a pupil of Porati, an Italian apothecary. His history has been published by Francesco Soave, a physician who personally observed him. He was found one night in the act of translating from Italian into French, and looked for words in a dictionary as usual, being asleep. His candle being extinguished, he found himself to be in the dark, groped for the candle, and went to light it again by the kitchen fire. ........ He used to leave his bed, go down to the shop, and weigh out medicines to supposed customers, to whom he talked. When any one conversed with him on a subject on which his mind was bent, he gave rational answers. He had been reading Macquer's Chemistry, and somebody altered his marks to try if he would notice it. This puzzled him, and he said 'Bel piacere di sempre togliermi i segni.'* He found his place and read aloud; but his voice growing fainter, his master told him to raise it, which he did. Yet he perceived none of the persons standing round him, and 'though he heard,' says Soave, 'any conversation which was in conformity with the train of his ideas, he heard nothing of the discourse which those persons held on other subjects.' His eyes seemed to be very sensible to objects relating to his thoughts, but appeared to have no life in them, and so fixed were they that when he read he was observed not to move his eyes but his whole head, from one side of the page to the other." (p. 441.)

Before supplying our next illustration, we shall refer to the well-known operation of the celebrated French surgeon, Cloquet, in the case of a Madame Plantin, which took place in the year 1829. The particulars are reported in the 'Bulletin de l'Académie de Médecine;' Paris, 1837, t. ii, p. 370; and they are given also in all the principal works on animal magnetism. The patient, it is stated, had laboured for several years under cancer of the breast, for which extirpation was deemed imperative. M. Chapelain, her physician, had repeatedly induced by magnetism a state of somnambulism in this person, during which common sensibility appeared to be annihilated. Under these circumstances, he proposed to M. Cloquet, who had advised the operation, that the same should take place in the artificial condition; more particularly as, in this state, her conversation and manner indicated no dread of it, whilst, in her waking moments, she repelled the idea with horror. The breast was removed accordingly; the patient not being, as in the operations of Mr. Ward and Mr. Toswill, in a state of *coma* but of *somnambulism*, for, during the whole proceeding, she conversed with the operator, indicating, however, no sensibility whatever to pain. On being awaked, she is stated to have had no remembrance of what had passed. Without discussing, at present, the validity of this account, we will *assume* its substantial accuracy; in which case, its parallel in spontaneous somnambulism may, in some respects, be recognized in the subjoined instance, related by Sauvages in the Memoirs of the Academy of Sciences for 1742, and extracted by Dr. Prichard, whose work we again place under contribution:

"On the 5th of April, 1737, visiting the hospital at ten o'clock in the morning, I found the patient in bed, which she kept on account of her debility and the pain in her head; the fit of catalepsy had just seized her, and it quitted her after five or six minutes; this was perceived by her yawning and raising herself into a sitting posture, the prelude to the following scene: She began to talk with a degree of animation and *esprit* never observed in her except when in this state. She sometimes changed her subject, and appeared to converse with some friends whom she saw around her bed. Her discourse had relation to what she had said during her attack on the preceding day. She repeated word for word an instruction in the form of a catechism, which she had heard on the evening before, and she made pointed applications of it to persons in the house, whom she took care to designate by invented names, accompanying the whole with gestures and movements of her eyes, which *she kept open*, and alluding to the circumstances and actions of the preceding evening. Yet she was all this time in deep sleep, a fact which was strongly averred, but which I should never have ventured to declare if I had not obtained satisfactory proof by a series of experiments on the organs of sense: when she began to talk, a blow of the hand inflicted smartly on her face, a finger moved rapidly towards her eyes, a lighted candle brought so near to the organ of vision as even to burn the hair of her eyebrows, a person unseen uttering suddenly a loud cry into her ear, and making a stunning noise with a stone struck forcibly against her bedstead, brandy and a solution of ammoniacal salt placed under her eyes and introduced into her mouth, the feather of a pen, and afterwards the extremity of a finger, applied on the cornea, Spanish snuff blown into the nostrils, pricking by pins, twisting her fingers; all these means were tried without producing the least sign of feeling or perception. Soon afterwards she rose, and I expected to see her strike herself against the neighbouring beds; but she passed between them, and turned corners with the greatest exactness, avoiding chairs and other furniture that happened to be in her way, and having walked about the ward, returned between the beds without feeling her way, lay down, covered herself, and in a few minutes became again cataleptic. She afterwards awoke, as if from a deep sleep, and perceiving by the looks of those about her that she had been in her fit, she became very confused and wept all the rest of the day, not having the least idea of what had passed in her paroxysm." (p. 445.)

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* Pleasant, truly, to be ever removing my marks.—Rev.

It is, of course, impossible to say that, in the above example, a surgical operation would have been sustained without pain; the deadened condition of common sensibility, however, as evinced by the tests employed, favours the idea that such might really have been the case.

The subjoined case, which we find in Smellie's 'Philosophy of Natural History,' was observed by Mr. Smellie himself; it displays, amongst other phenomena, a certain absence of outward sensibility which tends still further to enhance the credibility of painless operations;

"Within a mile of Edinburgh, I happened to reside some time in a farmer's house. Mr. Baird, my landlord, had a servant maid, whose name was Sarah. I had not been long there, when I learned from the family that Sarah, particularly after receiving an affront, on being angered, was accustomed to rise in her sleep, to go out, and to walk about the fields. My curiosity was excited, and I begged to be informed the first time that Sarah should rise in her sleep. A few nights afterwards, one of Mr. Baird's sons awaked me, and told me that Sarah had got out of bed. I immediately hastened to the apartment where she slept. When I arrived, Mr. and Mrs. Baird, one of their sons, and a servant maid, Sarah's companion, were present. Sarah was in the midst of them. She was slightly and carelessly clothed. Her neighbour's servant persuaded her to sit down. I took my seat by her. We began immediately to converse. She answered any questions that were put to her pretty distinctly; but she always mistook the person who spoke for some other, which gave us an opportunity of assuming any character within the circle of her acquaintance. I knew that one of the farmer's servants whose name was John Porteous, was a lover of her's; and, therefore, I addressed her in the style which I supposed John might sometimes have done. From that moment she began to scold me, upbraided me with several breaches of promise to marry her, and desired me, in the most peremptory manner, never again to speak to her upon that topic. The conversation was accordingly changed. I talked of her mistress, who was in the room, because I knew that they had occasional quarrels. Till now, I suspected that the whole was a trick, but for what purpose I could not discover. Sarah, however, abused Mrs. Baird in the harshest terms. She said, but the other day, she had been accused of stealing and drinking some bottles of ale; that her mistress was suspicious, cruel, and narrow-minded. As the mistress of the house was present, when these and other opprobrious terms were used, I began to doubt my preconceived notions of imposture; and, therefore, changed the object of my experiments and inquiries. I examined her countenance, and found that her eyes, though open, wild, and staring, were not absolutely fixed. *I took a pin and repeatedly pricked her arm; but not a muscle moved, not a symptom of pain was discoverable* . . . . . . This scene continued for more than an hour. I was perfectly convinced, notwithstanding my original suspicions, that the woman was actuated by strong and natural impulses, and not by any design to deceive. I asked if any of the attendants knew how to awaken her. A female servant replied, that she did. She immediately, to my astonishment, laid hold of Sarah's wrist, forcibly squeezed and rubbed the projecting bones, calling out, at the same time, Sarah, Sarah! By this operation Sarah awoke." (Vol. ii, p. 391.)

We shall next adduce a very interesting and well-authenticated instance of what seems to have been a sort of protracted and recurring somnambulism, during which a new character and a separate consciousness developed themselves. The following details, taken from the 'Edinburgh Phrenological Journal' for Oct. 1838, are supplied by Mr. George Combe. The communication is from Birmingham, and dated the 28th of May of that year:

"The name of the young woman is Mary Parker; she is now 16 years of age; she is of average stature for her years, slender, of the nervous temperament, with a slight admixture of the sanguine and lymphatic; she has black hair . . . . . . . . Mary Parker has had epilepsy once or twice, but during the last three years she has been subject, at intervals, to fits of a different description. When these fits are approaching, she experiences pain in her left side, in her back between the shoulders, and in the back part of her head. . . . . . . After the pain has lasted for some hours, she loses the recollection of all things and events that she knew in her natural state. She was in the house of her grandmother when she was first attacked. Her mother was sent for, but when she came, Mary did not know her, nor any person whom she had known when in her natural condition. When under the influence of the attack, she sees, hears, understands, speaks, and acts, like a person perfectly awake and in possession of the ordinary mental faculties, but there is a change in her dispositions, In her natural state, she is quiet, modest, and unabusive, showing amiable dispositions. In her new state, she is mischievous, sometimes impudent, and runs about looking out for an opportunity to do harm. She speaks disrespectfully to Mr. Jones (her medical attendant), and once threw some article at him. Her mother observed, that even when most mischievous, if a child were presented to her, she became instantly calm, she caressed it, and never injured it. These attacks lasted from a few hours to two or three days. When the disordered state is about to go off, she feels extremely weak, and lies or sits down: the fit will go off in a few minutes, and she finds herself again in her natural state, but faint and weak, and she generally asks for something to eat. She has remained well for ten or fourteen days, or sometimes more, and then another fit has commenced. In the new fit she recollects the circumstances that occurred during her previous fits, but has no knowledge of the events which happened in her natural state. After she had had several attacks, but during the period of her natural condition, her mother removed to another house. After Mary had been in it for a few days, a fit came on, and then she did not know where she was. This alternation of states has extended over three years. Of late, they have been more regular, and the fits have been more rare. She was in her natural state when I saw her; but looked pale, dull, and delicate. In her changed condition she is much more lively and energetic."

In a second communication from Mr. Combe, inserted in the same number of 'The Phrenological Journal,' and dated about a fortnight later than the preceding, the subjoined account is given :

"This day Mr. Jones having sent me notice that Mary Parker is in a fit, I accompanied him, Dr. John Conolly, and Miss —— to her mother's house. Mary was dressed, but had not come down from her bedroom, and had had no breakfast, although it was past one o'clock. She came to us when her mother requested her to do so. There was an evident change in her countenance. The muscles of her mouth and cheeks were drawn up into an expression of malice and fun, excitement was evident, something between that of hysteria and mania. The expression of the eyes was less changed than that of the lower part of the face. They did not sparkle, or glare, or look wildly, but were calm and intelligent. I asked her if she knew me. She answered 'No—how should I? I never saw you before.' Her mother asked her, if she did not recollect the gentleman with white hair, who had felt her head a few days ago, and conversed with her about her feelings. She replied, 'No, mother—I never saw that gentleman.' Dr. Conolly mentioned to her, in a very gentle and deliberate manner, several of the incidents that had occurred at my first visit, to try if he could awaken recollection, but all was in vain. It was clear that she had no consciousness whatever of having seen me before; she said to him 'I have never seen *you* before either;' which was quite correct. When asked if she knew Mr. Jones, she replied, 'Yes,' (laughing and giving him a push on the shoulder) 'I know Jones well enough.' She now wished to go up stairs to her bedroom ; but her mother sat down in the stair, and completely blocked it up to prevent her. She, on observing this, moved quickly along for a step or two, and trod on her mother's toes. On her mother withdrawing her foot, and giving her a push to drive her off, she laughed knowingly, with the peculiar expression of gratified destructiveness, secretiveness, and wit.

"With a view of ascertaining to what extent she was intelligent, Mr. Jones asked her, if she could take us to the house which her mother had occupied before she came to the one in which we now were. She laughed and said she could not. I asked her 'Why she could not?' She laughed again, but made no answer. I pushed the inquiry: 'Have you forgotten the way to it?' 'No:' still laughing. 'Then why could you not take me to it?' 'Ask Jones.' Mr. Jones said, 'Tell him yourself, Mary.' She laughed archly, and then said, 'Because it is taken down ;' obviously enjoying the mystery which she felt that she had cast around her former dwelling in our minds. We remained with her about twenty minutes in all, on this occasion.

"Before I left Birmingham, Mr. Jones mentioned to me that she had been twice magnetised, so as to produce a magnetic sleep. She was in her natural state, when first magnetised, and on her recovering from the sleep, she was found to be in the diseased state. She was in the changed state, the second time, and when she recovered from the magnetic sleep, she was in her natural condition."

A single instance of a case of this kind would hardly be credited. Besides this one, however, many others are recorded, which are well attested, and hitherto received by the profession as authentic. Of this kind are those cited by Dr. Abercrombie, and Dr. Prichard. From the able treatise of the latter, we extract the following account, furnished by Dr. Dyce, of Aberdeen, to the 'Edinburgh Philosophical Transactions :'

"The patient, who was a servant girl, was first attacked by fits of somnolency during the day, which came on with a cloudiness before her eyes and a pain in her head. In these fits she talked of scenes and transactions which appeared to be as in a dream, and to follow her occupations, dressed herself and the children of the family, and laid out a table correctly for breakfast. Being taken to church during the attack, she behaved properly, evidently attended to and was affected by the preacher so as to shed tears. In the next paroxysm she gave a distinct account of the former, although during the interval she had no recollection of being at church. During the attack her eyelids were generally half shut; her eyes sometimes resembled those of a person affected with amaurosis, that is, with a dilated and insensible state of the pupil, but sometimes they were quite natural. She had a dull vacant look, but when excited knew what was said to her, though she often mistook the speaker: it was observed that she discerned objects which were but faintly illuminated. The paroxysms generally continued about an hour, but she could be roused out of them; and then she yawned and stretched herself, like a person awaking out of sleep. At one time she read distinctly a portion of a book that was presented to her, and she sang much better than in the waking state. After six months this affection ceased on the appearance of the catamenia."

There might be cited other cases of alternating consciousness, or *dypsychia*, as it has been termed by Dr. Prichard, spontaneous and artificial, but those already given are sufficient for the purpose of exemplifying the actual characters of that modification of *hysteria* (the term being employed in its ordinary and widest acceptation) denominated *somnambulism.* And although it is likely enough that some little exaggeration or colouring may pervade the above narratives, the evidence in support of the main phenomena, as arising spontaneously, is undoubted, and undergoes no question; it satisfies men like Dr. Abercrombie and Dr. Prichard, of high and established reputation, accustomed to investigate circumstances and to balance testimony relating to such things; and, however curious and extraordinary the cases may appear, they are, when related by honest and able men, whose authority would be received on other corresponding subjects, admitted to be genuine. Now, if states of the system so abnormal may arise from inward and inappreciable causes, where is the reason for doubting that, under some circumstances, they may be provoked by the mesmeric processes? The *onus probandi* of the contrary lies with those who maintain that it cannot be so. In the impossibility of personally examining cases, or in the absence of any valid testimony to the fact, the power of inducing somnambulism by artificial means might very fairly be *questioned;* but knowing so little as we do of the causes of this affection, even when it arises spontaneously, how shall we make out, *a priori,* that mesmerism, under no circumstances, can lead to its production? It is purely an affair of fact, to be determined by observation; and where from any cause this may be impracticable, its credibility must be regulated by the evidence. We have ourselves witnessed instances of somnambulism, induced by magnetic manipulations, and have not doubted of their reality. We have observed individuals who had submitted to the practice, to fall down, as if in deep sleep, and manifest no signs of outward sensibility, and then to arise out of this state into one closely resembling that in the instances we have adduced of spontaneous somnambulism, evincing, most commonly, torpor of the senses, unless there was some special excitant to a particular object; the patient holding conversation sometimes with the mesmeriser only, at others with bystanders indifferently; and doing a number of acts, and exhibiting various sensibilities, which indicated *some* though *anomalous* communication with the external world. In one well marked instance, where the mental activity was very considerable, we elevated the eyelids, noticed a staring vacant look, the pupils widely dilated, and utterly insensible and incontractile on the closest approach of the flame of a candle. Great exaltation of sensibility, and great depression of the same, we have remarked in these cases; and partial torpor, compensated by elevated susceptibility elsewhere, we have also witnessed.

If, from any circumstances, actual cases cannot be witnessed, testimony alone must supply the materials for a decision concerning their reality; and, here, we do not see that the evidence to prove mesmeric somnambulism need be higher or stronger than that which is deemed requisite to demonstrate its spontaneous analogue. Any one who shall take the trouble to examine some one of the leading works on animal magnetism will readily perceive that, all reasonable allowance being made for exaggeration in some cases, and misrepresentation in others, the attestations are as numerous, and some of them apparently as decisive, and from as well-informed and intelligent witnesses, in favour of *provoked* as of *natural* somnambulism.

Exactly on the same grounds, then, that guided us to a conclusion in dealing with the simpler, *hysteric* results of mesmerism, do we admit the reality of the somnambulistic phenomena within the limits of the definition given in a foregoing page, and maintain that, in the actual state of the question, they cannot reasonably be rejected; that they are clearly within the boundaries of ordinary medical science, presenting no characteristics at variance with past experience; and that, consequently, there is nothing in them by which we ought either to be startled or confounded.

We have said *within the limits of the definition given in a foregoing page*, because there are characteristics recorded of somnambulism, which certainly our formula will not comprise; we allude to what have been termed the phenomena of *lucidity;* by which is understood the display of certain qualities and capabilities said to arise in somnambulism in its highest stage of development.

The statements we have now to investigate are entirely distinct, both in nature and in credibility, from any that we have hitherto examined. So far from harmonising with received laws or principles, they, in many respects, oppose themselves to all ordinary notions concerning either the probable, or the possible; the evidence, therefore, required to prove them, must, in extent and completeness, far transcend what we might deem adequate to assure us of such facts as those with which we have as yet been engaged. Indeed, with respect to some of them, it may be a reasonable question, whether any conceivable amount of testimony should lead us to admit their possibility even,—excepting on principles that would justify the recognition of miraculous interposition. For, we shall presently show that, according to the more advanced disciples of the mesmeric school, a lucid somnambulist is endowed with the faculty of enunciating information upon almost any conceivable subject, however unlearned or ignorant he may be in the waking state; he can tell what is going on about him or at a distance without using his own eyes or those of other people; the past is known and the future foreseen; his own diseases and those of others, near and afar off, are diagnosticated and successfully prescribed for; in a word, the lucid sleepwaker is represented as knowing almost everything; and all this, not in the ordinary way by observation and reflection, but by a sort of mystic intuition. Thus, Mr. Colquhoun states, in his 'Isis Revelata,' that "the eye of the mind, the internal power of vision, is wonderfully strengthened and enlarged, and seems unconfined within the narrow limits of space and time; we do not see objects in a merely superficial manner—we penetrate beyond external nature." M. Teste, from whom we shall next quote, is a French physician, and a member of several learned societies; his 'Manual' has recently received an English dress, and is, by permission, dedicated to Dr. Elliotson. From these circumstances we infer that M. Teste is an admitted authority; and, on this account, we shall draw somewhat largely upon him for particulars of the phenomena of lucidity. We find it stated, then, by this author, that the condition in question is often characterized by "vision without the aid of the eyes—intuition —interior prevision—exterior prevision—penetration of thought—transposition of the senses—the instinct of remedies." With respect to the faculty of seeing without the customary organs, he affirms that there is no magnetiser who has not witnessed its manifestation twenty times. *Intuition*, we learn from the same writer, initiates, suddenly, the intelligence of the subject in whom it occurs, into the sublimest mysteries of his intimate nature.

> "One could never imagine with what tact, justice, and precision somnambulists ascertain what passes within them. They assist, literally, in the accomplishment of all their organic functions: they discover therein the most imperceptible disorder, the most fugitive alteration. There are no ailments so slight or so latent, those even which, in the earliest periods of their existence, not only furnish no external symptom, but yet manifest themselves by no species of internal suffering; there are no ailments, I say, which escape the investigation of the somnambulist. Then of everything there is formed an idea which is exact, rigorous, and mathematical. He would say, for example, how many spoonfuls of blood there are in the heart; he knows, to a nicety, how much bread would be required to satisfy his appetite at the moment; how many drops of water to appease his thirst; and all his estimates are of an incomprehensible exactness. Time, space, all kinds of forces, the resistance and weight of objects, his thought, or rather his instinct, measures, calculates, appreciates all these things in the twinkling of an eye. A woman in somnambulism hath the consciousness of her pregnancy from the first hour of conception; she feels whether or not she be in the disposition to conceive; finally, she will not be pregnant eight days before she will designate the sex of her child, *and never be deceived.*" (Teste, p. 115.)

By the power of *interior prevision*, "somnambulists," says M. Teste, "announce, by a sort of prescience proper to themselves, all the modifications destined to happen in their organism." With respect to *exterior prevision*, the same authority informs us, that "some subjects possess the incomprehensible faculty of predicting certain events, with which their own existence shall be found to have concern, but the cause of which, obviously foreign to their own economy, could have no explicable sort of relation with it." *Penetration of thought* is the singular faculty with which "certain extatics and a small number of somnambulists are endowed, of penetrating the thoughts of persons who are about them, before the thoughts have been in any way expressed." *Transposition of the senses* is said to occur in subjects who see, feel, taste, and hear by the stomach or by the ends of the fingers. The *instinct of remedies* enables the somnambulist to prescribe, with high probability of success, for the ailments of persons with whom he is placed in relation, and the defects of whose organism, actual or in anticipation, he readily discovers.

Dr. Passavant, of Frankfort-on-the-Main, has long been a writer of standing among the mesmerists; and from him we shall take a brief account, which is given in the work named at the head of this article, of a lucid somnambulist who exhibited the phenomena in question:

> "She attained this condition of vision first by magnetism, later by the mere will, and in this state she saw the persons and things whereupon her will rested. Frequently she described, with perfect accuracy, the bodily and spiritual condition of men whom she had never seen, and administered curative agents, such even as in her waking state were totally unknown to her; or she ascertained that the means of cure did not exist, as in organic defects for example. It depended upon her will to remember or not, on awaking, these interior observations." (p. 93.)

Dr. Caldwell, a well known American physician, who has written on hygiene and some other medico-philosophical subjects, has published a pamphlet on mesmerism, in the preface to which we find the following statement:

> "For one person completely to identify another with himself—sense with sense—sentiment with sentiment—thought with thought—movement with movement—will with will—and I was near saying existence with existence—and to gain over him so entire a control, as to be able to transport him, in his whole mind and being, over mountains, seas, and oceans, into distant lands, and disclose to him there the objects and scenes which actually exist—of which he was utterly ignorant before, and becomes alike ignorant again, when restored to his usual condition of existence; and, higher and grander still, to waft him at pleasure through space to any or all of the heavenly bodies, of which we have any knowledge, and converse with him about them—such deeds as these may well be called amazing. Yet are they as easy, certain, and speedy of performance, as many of the most common transactions of life." (p. xxi.)

Can such things be, and overcome us like a summer's cloud, without our special wonder?

Quis latet hic Superûm? Quod numen ab æthere pressum
Dignatur cæcas inclusum habitare cavernas?
Quis terram cœli patitur Deus, omnia cursûs
Æterni secreta tenens, mundique futuri
Conscius, ac populis sese proferre paratus?

The above statements, from accredited writers on animal magnetism, respecting the characteristics of *lucidity*, furnish a fair specimen of the averments generally to be found in mesmeric literature; and we can assure the reader, that in our selection, we have been influenced by no wish or intention to obtain an appropriate butt whereat to aim the shafts of ridicule. We have a very different design. However tempted to make merry with, or to scorn, the assertions concerning mesmeric lucidity, our resolution has been to realize the scheme declared at setting out, to examine the entire subject calmly, and without prepossession; and to do this in conformity with the method of investigation already enunciated.

The phenomena in question may be classified under two heads: first, those which, if supported by personal observation carefully and repeatedly made, and backed by corroborative testimony of the highest kind, might be admitted as possible; secondly, those which, as natural facts, could hardly be received upon evidence even the most overwhelming. We leave the reader to arrange the instances according to his own judgment; and shall at once proceed to the more important subject of examining them in detail. We may first observe, however, that, with many other unbiassed inquirers, we have anxiously sought for these wonders, when opportunity has arisen, but have never been enabled to find them; our only resource, therefore, is to discuss the value of the evidence in attestation of their existence, and to see if it correspond with the just requirements of a sound philosophy.

Little discussion, we apprehend, will be demanded to show that the higher phenomena, so called, of animal magnetism, as facts arising in the order of nature, are at utter variance with past observation. We know that isolated circumstances have at various times been recorded, apparently in opposition to the present assertion. We have read of the extravagances and the reveries of the Montanists of old, of the thaumaturgic doings of the Priest Gassner, (dismissed as an impostor by his Bishop,) of the convulsionnaires of St. Medard, of the prophets of Cevennes; and we are aware that there are other narratives of a like kind. A belief in the reality of the wonders mixed up with these histories was, however, never general, nor did it endure to any extent, beyond the period in which the excitement, occasioned by the actual facts, prevailed. It has only been of late, since the rise of *lucid mesmerism*, that the marvellous portions of these published accounts have been revived, apparently with the view of facilitating its reception. Certainly, all *generally* admitted experience has shown, that sight is dependent upon the eye, and that, without the mediation of that organ, vision is impossible; further, that for information to be enunciated, it must have been received through the senses; and that the power of "prevision" or of *seeing* into futurity, as distinct from *inferring* probable occurrences, is no *human* faculty. The miraculous events, on which rest the foundations of religious belief, cannot rightly be adduced to the contrary; these things appertain to a higher philosophy; they have ever been admitted and received as *out of the order of nature*, and, on that account, as *miracles*. The assumed facts of lucidity, however, are presented to us as *natural*, and they must so be discussed. In this point of view, we conceive it to be beyond dispute, that they seemingly contradict, or oppose themselves to every well-authenticated record of the past, and contravene at the same time the universal consent of mankind. Yet does this, by itself, furnish no good ground for their absolute rejection. The Emperor of Japan had, to himself at least, a similar reason for discrediting the Dutch merchants, when they affirmed that certain rivers of Europe became at times sufficiently solid to sustain the pressure of human footsteps, and even the weight of horses and heavy vehicles. Yet, in this case, it need hardly be said, an investigation of the whole affair would have invalidated the Emperor's conclusion, notwithstanding its accordance with past experience and anterior notions.

Is it so, however, with the phenomena of lucidity? And, in the other case, ought any amount of *ordinary* evidence to be deemed adequate to the proof of their reality? If it should even be made out that the testimony in favour of *lucid* somnambulism is as strong as that in support of *simple* somnambulism, are we as much bound, philosophically, to admit the one as the other? We contend for the negative. Evidence, as before maintained, must ever correspond in strength with the extraordinary and anomalous character of the thing to be proved; and thus, while attestation, of ordinary value and extent, may yield proof with respect to matters which harmonize with ascertained facts, none that is not of the very highest order can, or ought to be deemed decisive with regard to statements of a contrary kind. But we think it may safely be asserted that the testimony in support of the glaringly improbable facts in question is even *less* strong than that which is considered requisite to establish an *ordinary* philosophical proposition. It is neither complete, nor free from suspicion; and, when its fallacy cannot be demonstrated, it is yet so susceptible of being explained away, as to lose its conclusiveness. Evidence to be *complete* must not only come from valid witnesses individually considered, but the statements must be decisive and coincident amongst themselves. If, however, we consult the generality of the recorded examples of lucidity we shall notice that almost invariably there are no careful and precise details, showing that suitable precautions have been taken to remove the sources of fallacy; and that the cases themselves, for the most part, are, confessedly, a compound of hits and misses.

Moreover, the absence of uniformity in the results, obtained by observers of lucid phenomena, will not fail to strike an inquiring mind. One magnetiser reports one class, as constantly to be met with; another, never having seen anything to correspond, has, however, encountered other manifestations at every step. Thus, M. Teste considers himself so familiar with extra-ocular vision, that he ventures to affirm, there is no magnetiser who has not seen it at least twenty times; Dr. Elliotson says that, after six years' constant search, it is only very lately that he has witnessed one or two such cases. M. Petetin, in a work on 'Animal Electricity,' states that he had experimented upon a number of cataleptic women who, quite deaf to sounds in the common way, heard plainly when he whispered to them near the epigastrium; this, a somewhat frequent phenomenon in M. Petetin's experience, is but rarely heard of in that of his magnetic confrères. In the Rev. Mr. Townshend's work, almost every recorded case of somnambulism exhibits community of taste, on the part of the mesmeriser and mesmerised; some eighteen months ago, we know that Dr. Elliotson stated to an unexceptionable witness that, with all his accumulated experience, he had then never witnessed the phenomenon. Deleuze and most other writers on magnetism dwell constantly on the influence of the magnetiser's *will* on the moral and physical condition of the magnetised; others again, of equal experience, affirm that they never can recognise any influence except from *material* gesture. This particular discrepancy is most remarkable, and damaging in the extreme to mesmeric testimony. It is worthy of notice that the points of difference in all these matters generally mirror the mental differences of the observers. The avowed materialist, like Dr. Elliotson, rarely encounters manifestations so sublime and spiritual as those attested by Townshend or Deleuze. Does not the inference suggest itself? When we have proposed this difficulty to professed magnetisers, we have been told that the diversity in result came from the circumstance of different observers being on the look out for different phenomena. In this explanation, we believe the truth to be included; we suspect, however, that earnestness in the look out may have conduced more to excitement of the fancy than to accuracy of observation; and that the variations we have mentioned are inherent, rather in the minds of the observers than in the objects observed.

Nor yet is the evidence, incomplete and contradictory as it is, free from suspicion on other grounds. The phenomena are nearly always reported to have arisen in subjects upon whom experiments had been made for a long previous period, and who are considered to have been gradually *wrought up* to the state in question; and the results obtained pretty generally correspond with the favorite hypothesis of the particular mesmerist. When it is considered how thoroughly characteristic of hysteria, cunning, and clever deception are ascertained to be, ought not such traits at least to be suspected in all unwonted mesmero-hysteric instances? If our own inference respecting the analogy or identity of mesmerism with hysteria should be disputed, the argument is but little affected, since it is fully allowed, by most mesmerists, that magnetic somnambulists are ever deceptive, vain, and fond of effect. For our parts, we have little doubt that, both in spontaneous and artificially-induced hysteria and somnambulism, there is frequently a *superadded* deceit—a moral symptom of the disease itself, and not an indication that *all* is imposture. In researches into matters of this kind, we contend, not only that it is *not* "cruel and ungenerous to be ever suspecting young, innocent females, of excellent character and disposition," as Dr. Elliotson and others too confidingly maintain, but that it is just and philosophical to do so, even under circumstances where the motive can neither be understood nor imagined. When anything anomalous seems to develope itself in hysterical persons, suspicion of deception, we reiterate, should *always* be entertained. Were we to enter fully into the proof of this position, we should consume too much space; and, indeed, addressing, as we are, medical men, it is not at all necessary. Let it, however, be constantly remembered, that hysterical subjects are nearly always the persons reported as *lucid.*

Positive circumstances, moreover, occur from time to time, not merely throwing over the best-authenticated cases the greatest distrust, but proving moreover their utter falseness. These, in the distance, or in the absence of *critical* examination, have often seemed decisive and circumstantial enough; when, on coming nearer, or when looked into with a cool and unprepossessed spirit, the reality of the marvel has become dissipated most lamentably. These wonders are too generally like the *Fata Morgana:* afar off, all is beautiful and distinctly defined; on approach, the very outlines have vanished, and are nowhere to be found!

The proceedings of the French Academy of Medicine, in their inquiries relative to animal magnetism, exhibit abundant illustration of the statement just made. It may be known to most of our readers that this body has, at several periods, instituted commissions, charged with the examination of evidence bearing upon this subject. The reports which have been issued at various times, recount numerous cases of alleged lucidity, and at the same time display their most inconclusive character. We shall here content ourselves with noticing a few of these: but they are the choicest specimens adduced by the magnetisers.

The alleged phenomena of lucidity being so very extensive, and the statements with respect to them being so vague in relation to the qualifying circumstances, the Academy consented to make the faculty of seeing without eyes—clairvoyance—the touchstone of experiment regarding the reality of the state in question. Moreover, on the 5th September 1837, M. Burdin, one of its members, offered a prize of 3000 francs to any person who should display the faculty, by reading through an opaque substance. The money was deposited with a notary, not to be withdrawn until after the question should be decided. The parties appointed to act as judges in this matter were impartially chosen, and consisted of MM. Dubois, Double, Chomel, Husson, Louis, Gerardin, and Moreau. As the proposal was extensively published, it was reasonable to suppose that the best cases would present themselves, not only for the pecuniary gain's sake, but on account of the opportunity afforded of proclaiming to the world so public and so distinguished an attestation of the fact, if it had any existence. Indeed, the applications were many, and from great distances. Written and seemingly-authenticated accounts were, in most instances, sent beforehand to the Academy; on proceeding to the trial, however, the cases always broke down. Any one who shall peruse the account of these claims furnished in the *Academic History*, will perceive that every imaginable concession was made to the competitors, compatible with the object in view—that of testing the reality of the power. The results, however, never led to any positive conclusion; vision through opaque bodies, or without the eyes, could never be demonstrated. The prize had originally been proposed as open but for two years; an additional year was conceded; it was all in vain, and the prize was finally withdrawn. We have never heard of any serious objection to the justice or the impartiality of the umpires on the occasion.

The three following illustrative cases are abridged from the work of MM. Burdin and Dubois:

In Oct. 1837, a physician of Provence, M. Houblier, addressed a letter to the Academy setting forth that, for the space of a year, he had been constantly engaged in magnetic experiments, and had succeeded in developing nearly all the phenomena mentioned by authors; and that he was anxious to compete for the pecuniary prize, but that he should require some little time for the due preparation of his somnambulist previously to a demonstration so important. It was, however, nearly two years, before M. Houblier became sufficiently confident—not to present his subject, Mlle. Emélie, to the commissioners but—to forward to them an account in detail, of certain experiments indicating her ability to read a book, when placed behind the back. No time, however, was specified by him for the required journey to Paris. Another year had almost elapsed, before M. Houblier, was again heard from; when a second detail of successful experiments was sent to the Academy, but still there was a shrinking from the actual trial; and M. Houblier preferred a request for a further extension of time; this, after a lapse of nearly three years of preparation, was very properly regarded as mere trifling, and the demand received no attention. However, in the month of Sept. 1840, the somnambulist was at length sent to Paris, and placed under the care of M. Frappart, a friend of M. Houblier, and a cultivator also of animal magnetism. The subsequent history of Mlle. Emélie was published by this gentleman in the *Gazette des Hopitaux*, of the 31st Oct. 1840. From this account, it appears that shortly after her arrival, and preparatōry to her presentation before the commissioners, M. Frappart, fully confiding in her powers, commenced himself to experiment upon her ability to read with the occipital region. The precautions which were taken to obviate fallacy, however, constantly led to complete failure; a succession of excuses in explanation were made by the somnambulist, and admitted;—she was not well; the fatigue of the journey, the change of diet had disturbed her, &c. For a while, all these averments were regarded by M. Frappart as likely enough to be just. After reiterated attempts, all abortive, Mademoiselle at length adduces the plea of sickness, and "fears she has taken a fruitless journey, and is perplexed moreover by the number of books in the library, *readinq one for the other*." Her temporary guardian now begins to suspect her good faith; but, for the purposes of discovery, affects to sympathise with her; suggesting that it might be well to have only one book in the room, which she could study whilst sleeping, and that, to aid her, he should leave the room until the lucidity was complete. M. Frappart observes that the snare laid was so obvious, that the silliest mouse should hardly have overlooked it; it appeared, however, that Mlle. Emélie suspected nothing, but readily assented to the proposal. "I set my trap," continues M. Frappart; "Mlle. Emélie shall sleep there; here shall be the book, the doors shall be closed, and through this little hole I shall have my eye fixed upon the book." The somnambulist is summoned, she lies down, and is put to sleep by the agency of a magnetised ring, without any interposition on the part of M. Frappart. A book, the only one in the room, is placed upon a chair, a few steps behind Mademoiselle; he leaves the room, is away from the door for about five minutes whilst hastily breakfasting, and then resorts to his hiding-place, where he remains for nearly half an hour; after this lapse of time, the somnambulist, according to previous arrangement, rings the bell, as an announcement that her clairvoyance is complete. M. Frappart enters, never having seen the book removed; and yet, to his surprise, several words were distinctly made out. If there were trickery here, he reasons, the book must have been examined in the brief period he was away from the post of observation. On the following day, the experiment was repeated with greater care; and, on leaving the room, he commenced at once to watch through the key-hole. In about ten minutes, the book was seized by Mademoiselle, carefully examined here and there, and then returned to its place. The bell rings, and M. Frappart enters. Emélie read, as before, some few words, obviously to the extent of her previous preparation by searching the book. The discovery just made is not announced, but steps are taken for demonstrating the imposition to several other persons interested in the inquiry, and especially to M. Houblier himself, who, at once on receipt of a letter from his friend, sets off for Paris. The fact was exhibited to all by a repetition of the same manœuvre, and the young woman was, of course, never presented to the academic commissioners. Yet she had, for a long period in Provence, imposed upon many influential and respectable persons, besides her immediate protector, M. Houblier, who, on this exposure, acknowledged with grief and shame that he had, for four years, been the dupe of this artful person (une maitresse femme.) Had a book been written by some Provençal magnetist, just prior to the Parisian excursion, undoubtedly the case in question would have been recorded as supplying evidence of lucidity that was at once circumstantial, decisive, and irrefutable.

On the 10th of Oct. 1837, M. Pigeaire, of Montpellier, addressed a letter to the commissioners, recounting the history of his daughter's lucidity, and concluding by accepting the proposition of M. Burdin. From the details afforded in the communication, it appeard that Mlle. Pigeaire, a little girl 11 years of age, had recognized, in magnetic somnambulism, the arrival of a visitor when only at the street door; that she was, in this state, able to name the contents of a snuffbox when closed, and to see the interior of another person's body; in a word, that she was a complete and genuine clairvoyant. The counter-proposition of M. Pigeaire, in offering to compete for the prize, was in the following terms: "My magnetic somnambulist shall say to M. Burdin: Render me temporarily blind, be confident that the least light cannot reach my eyes. *If, in this state, I do with my fingers what you shall do with your eyes, that is to say, if I read with my fingers, which then become my visual organs, a plate of glass being applied on the printed characters, or hand-writing, which you shall give me to read; if, by these new organs, I transmit to my brain the tenour of the writing which you shall have given me, and if I express it to you without any mistake, I shall doubtless have fulfilled the conditions of your programme; but you must recollect that, in order to fulfil this condition, all the properties of the object which my fingers look at must be accessible to light; otherwise, how should I see them? How should my fingers convey to my brain the colour and form? In one word, put me in the conditions for reading with my fingers as you read with your eyes.*" Although this proposition scarcely harmonised with some of the conditions laid down by M. Burdin, it was yet acceded to, because the concession "render me temporarily blind" seemed to permit the employment of all reasonable means for securing the exclusion of light from the eye; and, in the month of April 1838, M. Pigeaire, with all his family, arrived in Paris. Although, in the previous correspondence, he had spoken of the delicacy of the affair, seeing that the somnambulist was his own daughter, he does not proceed quietly and unostentatiously to present her to the commissioners, but in the first instance makes her the subject of public exhibitions, gathering together physicians, newspaper editors, distinguished literary persons, peers even, and other people of rank. Signatures attesting the genuine character of the case were obtained from many of these parties. "However," says the Academic History, "the commissioners quietly waited till it should please M. Pigeaire to show them his somnambulist; they were men severe and exact, not at all anxious to mingle themselves with peers of France and deputies. It was of no importance to them whether George Sand* gave or refused her signature." Two months after arriving in Paris, the commissioners received a communication from M. Pigeaire, setting forth that, in the ensuing trial, his daughter's eyes must be bandaged with an apparatus of his own, constructed of black velvet, and that this must be adjusted by himself. This gave rise to much discussion, it being contended by the commissioners that, here there was a manifest departure from his own "render me momentarily blind," terms which implied that the mode of shutting out the light should be fixed upon and be carried out by some one or more of themselves; that, besides, the velvet bandage could easily be disarranged, so that, beneath its inferior border, vision to some extent could take place in the ordinary way. Notwithstanding all this, M. Pigeaire would listen to no other plan; every proposal, interfering with his own method of applying his own bandage, was, for some reason or another, constantly rejected; at length, after many conferences the commissioners surrendered, on the single condition that, while the objects to be descried "should be placed at the *distance* required by M. Pigeaire, and in a perfect light, the *direction* should be in exact opposition to the eyes, so that if some slight separation of the bandage, at its inferior margin, should occur, nothing could in that way be seen." Even this simple provision against fallacy was disallowed; the object that was to be distinguished by the somnambulist must be held by herself, and in the position that she wished! It is almost needless to say that, hereupon, negotiations ceased.

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* A *nom de guerre* assumed by Madame Dudevant.—Rev.

It is unnecessary to exhibit, by any argument, the worthlessness of the evidence presented by this case; the palpable shrinking from the proposed competition, after all that had preceded, furnishes materials for determining its true character far more decisive, in our estimation, than any recital of wonders that had been displayed at Montpellier, and at the public exhibitions in Paris, even though supported by the written testimony of peers, deputies, and George Sand.

Now, if clairvoyance had been a reality, would not the Burdin proposal, according to every law of probability, have led to a demonstration of the same—the faculty whose manifestation, according to M. Teste, every experienced magnetiser has seen at least twenty times? Before we close our notice of the Academic prize, we shall furnish some particulars of one other claim that was made, and that by no less a personage than M. Teste himself.

It was in the third and last year of those in which the prize was open to competition, on the 1st September 1840, that M. Teste addressed to the president of the Academy the following letter:

> "Mr. President,—Having succeeded in producing an experiment which appears to me calculated to lead to a sure judgment, if not concerning the question of animal magnetism, at least upon that which relates to the phenomena of seeing through opaque bodies, I consider it a duty to propose to the academy the examination of this experiment.
>
> "I refer to one *and even to two* somnambulists reading through the walls of a box of pasteboard and even of wood, the only condition indispensable to the success of the experiment being that the direction of the letters inclosed in the box should be previously designated.
>
> "I presume to hope, Mr. President, that this letter will be read at the first meeting of the Academy, and that none of your honorable colleagues will refuse their consent to the examination of an important fact, and one the consequences of which may be of immense importance to science and *humanity*." "Signed Teste."

This proposal was at once accepted; and it was conceded that the box should be constructed of any substance M. Teste should wish, excepting glass that was decidedly transparent. Accordingly, on the 5th of September, the commissioners, including MM. Husson, Louis, Chomel, Gerardin, Dubois, and Double, assembled by appointment at the house of M. Teste; and they had been requested to bring with them a pasteboard box, inclosing some lines in printed character.

The subject, a young girl, was introduced into the room, and magnetised by M. Teste; very soon she was declared to be in somnambulism; and the box inclosing the printed paper was handed to her, the direction of the lines and the letters being indicated according to the previous conditions. A little after, M. Teste asked the alleged somnambulist if she would be able to read in the interior of the box; she answered in the affirmative. He asked her in what time she would be able to read; she answered: in ten minutes; and all that with an assurance and confidence truly remarkable. We shall supply the sequel of this narrative by a verbatim extract from the 'Academic History:'

"However, the somnambulist looked at the box, moved it, and turned it within her hands. In her movements she tore one of the bands that served to seal the box. This was openly remarked upon, and the thing was not pushed any further. The embarrassment of the somnambulist appeared to increase; she exerted herself vainly in efforts, in appearance at least, very fatiguing. The length of the lines (being verse,) did not fill the entire length of the box; there was a considerable space of white paper, and to this space especially were the attention and the fingers of the somnambulist directed, as if striving to spell where there were no letters. She had announced her ability to read in ten minutes; half an hour, an hour even, had passed away thus. The magnetiser asked the somnambulist how many lines there were in the box. She said there were two; he pressed her to read; she announced that she saw the word *nous*, and later the word *sommes; nous sommes.* Finally, the somnambulist having declared that she could read no more, the box was taken from her hands; the magnetiser caused the magnetic sleep to cease, and the somnambulist quitted the room.

"The box was opened shortly afterwards in M. Teste's presence; the fragment of printed paper which it inclosed contained the six following lines. . . . .

Encore un mot, Romains, tout est mûr pour la gloire,
Ma dernière parole est un cri de victoire;
Nos succès fussent-ils différents ou douteux,
S'arrêter est fatal, reculer est honteux.
Choisissez; Rome libre ou la patrie esclave,
La mort, effroi du lâche, est la palme du brave.

It is then seen that the box did not contain two merely, but six lines; and in these six, there was neither *nous* nor *sommes*. The experiment failed completely." (p. 629.)

We shall further exemplify the feeble character of the evidence to prove clairvoyance, in recounting certain details of two more recent cases which did, for a while, seem to furnish testimony the most conclusive that lucidity, after all, was a fact. We think it right to state our own opinion that the instances in question, up to a certain period, supplied documentary proof equalling at any rate, if not surpassing, the very best in support of other such cases. With the outlines of the first illustration, many of our readers are probably familiar.

The arrival of Alexis in this country in the summer of 1844 had been preceded by his fame. For some months previously, the newspapers and journals had related the most wonderful stories of this youth's extraordinary powers. There was nothing, in the way of lucidity, he had not done and could not do. He could describe the contents of any room of any house never before seen or heard of; he had divined the contents of sealed packets, and thick wooden boxes; he had revealed to anxious authors the unknown lodgement of important papers; and a thousand things besides equally marvellous. He was considered, we believe, by the leading mesmerists of this country, to constitute their fairest specimen. On his arrival, one of the most influential of the metropolitan journals supplies copious details attesting the lucidity of Alexis. Here, at last, thought we, doubt and uncertainty come to an end ; here is what we have been so long anxious to see, a case of downright, unequivocal clairvoyance, at least. Accounts, however, published by other papers, exhibited the lucidity in a manner dubious and equivocal enough. The same hits and misses, the same half-right and half-wrong, the same extenuation of failure, that we so often encounter on approaching these lucid somnambulists. We take up the 'Zoist,' the accredited organ of the mesmerists, and expect there at least to have some true and particular account of the successes such as they are described and vaunted in the systematic books. What do we read? Statements exhibiting, certainly, amazing power and accuracy, as to some matters ; but, even here, much hesitation and great blunders as to many others.

We presume that it was felt by the parties who had hopefully anticipated the production of Alexis in London, that the demonstrations did not realize previous expectations: the following is the explanation of the failures, furnished in the 'Zoist:'

> "The power was on Alexis at times only; coming in gushes or flashes, as forced states of the living body do; pain, convulsions, flashes of light, noise in the ears, emotion, and even the inspirations of genius. This should be carefully remembered. The state is a forced state; and though, if strong, it is more uniform; if weak, it will flicker. It must also be remembered, that he unfortunately thinks aloud; names each appearance and thought as it presents itself to him, and therefore seems to guess; whereas he is like a man reading an ill-written letter, or looking at very distant objects, who fancies one word or object and then another, till at last he is satisfied what the real one is. He, therefore, is often apparently in great error when he first speaks; and, though nothing be said by others, he goes on correcting himself. It would be well if clairvoyants said nothing and had nothing said to them, till they felt themselves certain."

We are willing to allow that this quotation would yield a very fair reason for the seeming guesses of Alexis, if the question were of some individual illustration of a general fact already established; in the present state of matters, however, the explanation will not satisfy the justly sceptical mind ; for let the whole account of this instance of lucidity, with its qualifications, be compared with the announcement, in mesmeric systems or manuals, of positive, unmistakeable indications and manifestations of this state, and it will be seen how immensely the English displays of Alexis come short: and, where *shall* we look for the lucidity of the books, if not in a subject of European celebrity?

We shall not pursue the story further in detail : most of our readers very likely are aware of certain experiments in this case conducted by the Editor of this Journal, and of the very unsatisfactory results, to say the least of them. By all the persons who witnessed the last investigations at the house of Dr. Forbes, we believe, with the single exception of M. Marcillet and one other avowed mesmerist, they were considered to have established the proof of downright imposture; in our extreme caution, we do not go so far as this, as the results were all negative, but we do maintain that they were adequate to show in the most decided manner that, in the person of Alexis on the occasions in question, *lucidity*, to say the very least, was unproved.

In the last number of the Zoist, that for January of the present year, Dr. Elliotson has collected a variety of attestations to show that Alexis was truly and faithfully all that, before his arrival in London, he had been represented. And, indeed, on a careless examination and afar off, all does appear circumstantial and definitive enough; but the critical eye sees defective evidence and room for delusion or collusion in almost every one of the recorded cases. Why is it that the marvellous ever vanishes on approach and under critical investigation? The following would seem to be the reason afforded in Dr. Elliotson's paper: "M. Marcillet immediately predicted that Alexis, with such a person (an incredulous one) at hand, would not succeed. Such his invariable experience showed, although he allowed he could not account for it." (p. 491.) The same gentleman excused the failures at the house of Dr. Forbes, by the *atmosphere of incredulity* ("l'atmosphère d'incrédulité") which he said existed around him, emanating from the persons of the sceptical doctors present,—although these unconscious poisoners of the air, all (with one exception) sat in solemn silence at a considerable distance from Alexis.

The reason assigned in Dr. Elliotson's paper is, doubtless, a very convenient one for the mesmerisers, but surely it is not such as can for a moment weigh with a philosophical mind, when there is question respecting the very existence of such a power as clairvoyance.

As a further illustration of the way in which cases of this kind come to nothing as evidence in proof, when made objects of careful and critical investigation, we shall adduce another little history, which we gather partly from certain numbers of the 'Manchester Guardian,' issued last April and May, and partly from information supplied to us by a gentleman, in the accuracy of whose information we have every confidence.

Mr. Hewes, a gentleman of property residing in Greenwich, educated for, though not practising, the medical profession, having, during a temporary residence in Germany, been witness to the wonders of animal magnetism, commenced, on his return home, to devote himself with energy and assiduity to the practice of the art. Amongst others upon whom he had exercised his powers was a young man of about 18 years of age, called "Jack;" the effect being stated to be the production in him of genuine and unquestionable clairvoyance. Hereupon, Mr. Hewes resolved to exhibit this marvellous phenomenon in some of the principal towns of the kingdom, commencing with Manchester as his native town, and the place from which he draws a large proportion of his income.

Accordingly, the walls of the great factory town were extensively placarded, announcing the appearance of a clairvoyant at the Mechanics' Institution, on a particular evening. At the period announced, the exhibition took place, and assuredly, the case confounded alike the wise and the simple. All the local newspapers gave, in their next numbers, detailed statements; and, from the 'Manchester Guardian' we learn that, after a preliminary address by Mr. Hewes, Jack was produced in a state of supposed somnambulism, and any medical man was requested to come forward and plaster up the eyes, so as effectually to exclude the possibility of ordinary vision. A young surgeon of the place took this office upon himself, a gentleman, we are informed, whose indifference to mesmerism was only relieved by a modicum of contempt. The eyelids were bound down by adhesive plasters, folds of leather superimposed, and these again secured by other plasters; the only provision enjoined by Mr. Hewes, being that the superciliary ridge should be uncovered, as the power of vision, according to the statement of Mr. Hewes, was transferred to that region. The trials followed, and the results were truly surprising. No guessing, no hesitation, all was clearly seen indeed. In a few evenings afterwards, at another of the public institutions in Manchester, the Atheneum, a second exhibition took place with substantially similar results as on the former occasion, the plasters being fastened over the eyelids by another surgeon, associated, on the platform, with an intelligent layman for the purpose of securing complete exclusion of light. The testimony of both gentlemen was to the effect that the lad could, after what was done to him by themselves, exercise no useful vision through the eyes. Complete success once more followed. The facts were again promulgated by the 'Manchester Guardian,' and other papers, and so far all was triumphant. We have read much of the documentary testimony in favour of the reality of clairvoyance, but we do not think any of it more forcible and complete than the evidence published at this time in the newspapers; and, certainly, nothing on a superficial view of the case, could have been more so.

The matter, naturally enough, began now to excite considerable attention, and a number of literary and scientific gentlemen were anxious for a private investigation, and Mr. Hewes at once acceded to the wish. A *reunion*, accordingly, took place at the house of a medical practitioner. Without going into any detail, we can state, on the best authority, that the results on this occasion were, as usual on close examination, most unsatisfactory. About the same time, an ingenious young surgeon of the place, Mr. Dunn, made trials upon his own eyes with plasters, and then advertised that he would experimentally demonstrate and explain the way in which the success of Jack had been accomplished. At the Atheneum, the scene of previous triumphs of clairvoyance, Mr. Dunn appeared, and requested the same medical man who had officiated on the preceding occasion, to come upon the platform, and "make up" his eyes exactly as he had done those of Jack. This was accomplished; and it was stated by the medical operator that his mode of securing, by plasters, the occlusion of light, had been the same in the two instances, and, as he thought, complete and efficient. What happens? Why, Mr. Dunn, unmesmerised, was clairvoyant too!* It was stated by Mr. Hewes, who was present, that, although the thing was cleverly done, the true explanation had not been given. It has been stated that, in these experiments, the superciliary ridge was uncovered, and Mr. Dunn saw *over* the plaster from a very small crevice, having, by the exhibition of a little assumed mesmeric irritability of the muscles about the eye, contrived to bring about the formation of this aperture, after the application of the plaster strips. Whether Jack's mystic vision had been accomplished by employment of a similar manœuvre, or not, it was contended, on all hands, that no satisfaction could exist with respect to his clairvoyance, unless some other tests, more decisive than those with plasters, should disprove Mr. Dunn's position. Mr. Hewes, on whose good faith no suspicion whatever rested, readily agreed to any plan of closing the eyes which might be devised, compatible with avoidance of all injury to the lad. Accordingly, a few days afterwards, a party of gentlemen, medical and lay, assembled, and agreed, without the knowledge of the youth, to bind down the eyelids with shoemaker's wax, protecting the eyelashes by narrow strips of adhesive plaster. At the proper time, the assumed clairvoyant was introduced; strips of plaster were applied as usual, and, over these, a firm coating of the wax. During the application of this latter, the lad seemed to suspect what was being done, and at once exhibited a disposition to resist, but his master's influence stilled him; and the eyes were most effectually closed, and yet the pretended seat of vision, the region of the eyebrows, was abundantly exposed. But neither entreaty nor command, nor insisting, nor beseeching, were of the slightest avail in the hour of trial; Jack was inexorable, and would not even attempt to see. Mr. Hewes gave up the case. He had advertised his re-exhibition for that same evening at the Mechanics' Institution; he attended according to advertisement, announced what had taken place, and directed that all who had come should receive back their admission money; and what had been taken, on former occasions, was presented to the respective institutions where it had been received. Liverpool had, prior to this explosion, been placarded with the announcement of Jack's speedy appearance upon that stage. All was abandoned.

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* Itinerant mesmerists have more than once been thus completely beaten at their own weapons, both in London and in the country. In one case, by means of a system of secret signals between two of these sham mesmerists, many of the most striking results of "the science" were produced.

Now, we readily concede that, if it were certain that Alexis and Jack were arrant rogues, such a fact would not disprove the reality of clairvoyance; but when the very choicest specimens are found to be so very incomplete and unsatisfactory, does not distrust naturally arise with respect to all the rest? And ought we to admit—can we philosophically admit the truth of clairvoyance, supported only by testimony that is imperfect in itself and encompassed with suspicion?

In reviewing most of the individual cases of lucidity, even as detailed by the mesmerists themselves, there is found to be a wide discordance between them and the positive assertions, occurring in books, concerning the general fact. As an illustration of this, we extract the following account, furnished by Mr. Lynill of Manchester, from the 'Zoist' for April 1844. It is part of a communication addressed to Dr. Elliotson. It relates to the case of a young Irishwoman who, in labour, had been thrown into mesmeric somnambulism, during which no sensibility to pain was for some time apparent. A few days before labour, she had, in the sleep waking state, affirmed certain matters, suggesting the possession on her part of *intuition* and *interior prevision*. Mr. Lynill observes:

"The insensibility to pain, during an hour and a half, was complete; I believe that any operation might, during that time, have been performed without giving her the least pain. Her prediction as to the time at which she would be taken ill was verified, as she was seized soon after ten o'clock on the Wednesday night; but she was at fault in supposing her illness would not be labour. She also gave some descriptions of her child, which proved to be incorrect."

We have ascertained, as a fact, that these "descriptions of her child" included the *sex* amongst other things; and, truly, all this does not realize the expectations raised by perusal of M. Teste's account of intuition in the pregnant state, as will be apparent from the following, an extract from a previous quotation:

"One could never imagine with what tact, justice, and precision, somnambulists ascertain what passes within them .... of everything, there is formed an idea that is exact, rigorous, and mathematical .... all his estimates are of an incomprehensible exactness. .... A woman will not be pregnant eight days before she will designate the sex of her child, and *never be deceived.*"

It is not we who have rendered the last words in italics; it is the author who has done so.

Miss Martineau, whose publicly avowed adhesion to mesmerism, in its entire plenitude, has recently excited considerable attention, supplies us, in her published 'Letters,' with an instance of intuition manifested in a young girl who is designated J.; and, in the following extract, the reader has still further exemplified the kind of evidence ever brought forward in proof of lucidity:

"The next evening (Monday, October 14,) J. did not come up as usual to our *séance.* There was affliction in the household. An aunt (by marriage) of J.'s, Mrs. A., a good woman I have long known, lives in a cottage at the bottom of our garden. Mrs. A.'s son, J.'s cousin, was one of the crew of a vessel which was this evening reported to have been wrecked near Hull. This was all that was known, except that the owner was gone to Hull to see about it. J. was about to walk to Shields with a companion to inquire, but the night was so tempestuous, and it was so evident that no news could be obtained, that she was persuaded not to go. But *she was too much disturbed to think of being mesmerised.* Next morning there was no news. All day there were flying reports,—that all hands were lost —that all were saved—but nothing like what afterwards proved to be the truth. In the afternoon (no tidings having arrived) we went for a long drive, and took J. with us. She was with us, in another direction, till tea-time; and then, on our return, there were still no tidings; but Mrs. A. was gone to Shields to inquire, and if letters had come, she would bring the news in the evening. *J. went out on an errand while we were at tea*, no person in the place having then any means of knowing about the wreck; and *on her return, she came straight up to us for her séance* . . . . . . J. was presently asleep, and her mesmerist knowing the advantage of introducing subjects on which the mind had previously been excited, and how the inspiration follows the course of the affection, asked, as soon as the sleep was deep enough, 'Can you tell us about the wreck?' J. tranquilly replied, 'Oh! yes, they're all safe; but the ship is all to pieces.' 'Were they saved in their boat?' 'No, that's all to pieces.' 'How then?' 'A queer boat took them off; not their boat.' 'Are you sure they are all safe?' 'Yes; all that were on board; but there was a boy killed. But I don't think it is my cousin.' 'At the time of the wreck?' 'No, before the storm.' 'How did it happen?' 'By a fall.' 'Down the hatchways, or how?' 'No, he fell through the rigging, from the mast.' She presently observed, '*My aunt is below, telling them all about it, and I shall hear it when I go down.*'" (p. 26.)

Without quoting *verbatim* the sequel of this story, it may be sufficient to state that the facts of the case were as set forth by J. who, on demesmerization, assumed to be ignorant of the whole affair; the news had been brought from Shields by the aunt, prior to the *séance*, it being contended, however, that J. could have no knowledge upon the subject.

Now, we do not say that here we have demonstration that J. is an impostor, and that Miss Martineau is her dupe; but the passages above, which we have placed in italics, do certainly both confirm and illustrate our position respecting the utter inconclusiveness of all such testimony. It is unnecessary to show this by any analysis; the weak points, in the account, have been exhibited in almost every notice of Miss Martineau's letters that we have seen; and we have scarcely spoken with an individual, mesmerist or otherwise, to whom the debility of this narrative has not been obvious.

We recur to the subject of clairvoyance, for the purpose of adducing one other example which strikingly shows the character and value of *lucid* phenomena, when tested in a spirit of caution and just scepticism, the absence of which, in the investigation of all such matters, must inevitably lead to the grossest credulity, folly, and extravagance. The subjoined statement is part of a communication which was addressed by Dr. Ferguson to the Editor of the Bath Herald, and which appeared in the ‘Provincial Medical Journal’ for Jan. 29th of this year:

*Letter from Dr. Ferguson to the editor of the Bath Herald.*

“Sir,—In the afternoon of Saturday, November 9th, Mr. Storer requested Drs. Cardew and Tunstall, Mr. Thomas Barrett and myself, to accompany him to the Daguerreotype Institution, in the Park, to see a most decisive proof of the reality of ‘*Clairvoyance*.’ We proceeded thither, and met Mr. Freeman, the proprietor of the Institution, and Dr. Owens. A small thin book with flexible leather binding was presented to us; it was, apparently, firmly secured by thin string traversing it longitudinally and three times crossing it, in the centre and over each end, and tightly knotted. Under the cover of this book a portion of a leaf of the Park Subscription Book was placed. The “*clairvoyante*” was reported, while mesmerised (having had, at one time, a thick shawl covering her head and the book, and at another time having been permitted to retire alone with it into an adjoining light room) to have read. She subsequently, being still mesmerised, wrote down from memory what she had been able to decipher.

| Copy of the “clairvoyante’s” autograph description of what she read: | Copy of part of the leaf read from: |
|---|---|
| | Victoria Park, Bath. |
| tion and or the donations | Subscriptions and Donations. |
| 6 0 all down figures. | £ s. d. |
| 6 0 at the top park Bath. | 1 1 0 |
| | 0 10 0 |
| | 1 1 0 |
| | 1 1 0 |
| | 0 10 0 |
| | 1 0 0 |

“While some conversation was going on Mr. Thomas Barrett went into another room, taking the book; in a short time he called Mr. Freeman, to whom he exposed the manner in which he had so removed the string at one corner, and turned back an angle of the cover of the book, that he was able to read exactly the same words, &c., as, and no more than, the child had done, replacing the string as if it had not been disturbed. Drs. Cardew and Tunstall, and myself, were shown the method pursued by Mr. Thomas Barrett; but previously the knot of the string had slipped; it, however, being situated at the back of the book, no influence was produced on the angle of the cover which was reflected. Mr. Freeman had been convinced that the ‘*clairvoyante*” had really accomplished something supernatural while in the mesmeric condition, that he had, before our arrival, told Dr. Owens he would consider it a point of duty to relate the fact as he then deemed it, to all the medical gentlemen he knew. My companions and myself left the Institution, but returned in a few minutes to ask Mr. Freeman if he would come forward with the book to expose the fraud practised in this instance, as we considered ourselves bound to lay the discovery before the public. He readily assented to our request, telling us at the same time that he had, during our absence, informed Dr. Owens that, being now convinced of the deception, he should certainly divulge it.”

And here we cannot help making a remark on the exceeding fondness—indeed constant practice—of the mesmerists to get their clairvoyants *to read through the pages of books*, and their extreme shyness and reluctance to allow them to read through sealed envelopes or boxes. The difficulties ought to be *precisely* the same in both cases. The only explanation seems to be, that the *book* affords such palpable and obvious facilities for *cheating*, while the box and envelope prevent this. In the experiments with Alexis, witnessed by Dr. Forbes, it is certain that the young man had most ready opportunities of seeing *all the words which he read*, without any thing interposed; and in some of the cases, it is equally certain that he *did* so read them.

In selecting specimens of the evidences of *the least incredible* of the phenomena of lucidity for analytical criticism, we have conscientiously regarded those we have taken as fairly representing the remainder; and if they do so, are we not justified in maintaining that the evidence is *not* either complete or free from suspicion; and, consequently, that, as *proof*, it is grievously defective and utterly inadequate to its purpose? Still, we hesitate to say that such things are impossible. This is an epithet which is only admissible in a very limited department of science. But we persist in maintaining that, with such counter-evidence before us, we are bound, by every just principle of philosophising, to refuse credence to all testimony in support of such things which has not been subjected to a similar ordeal. And we must here remark, that it were well if this canon were kept more constantly in view, even by men of science, in the discussions on mesmerism now so general. In every company we encounter educated men of good sense and good faith, who maintain that they have witnessed these higher phenomena with their own eyes, and under such circumstances as appeared to them to render either delusion or collusion impossible. It is painful to doubt such testimony. It would be absurd to doubt it in any ordinary investigation, scientific or otherwise, as to matters of fact. But when we find, on inquiring closely of these very believers, as we always do, that in no case were means adopted to render mistake *impossible*, and when we consider that the cases above detailed, and many others equally valid, were, before detection, supported by testimony of precisely the same kind, and of equal strength, we are compelled to persevere in a scepticism which, to those who have not investigated all the bearings of the subject, and who are ignorant of its minute history, must appear at once unreasonable and unphilosophical.

In an earlier portion of this article, we proposed, as a guiding principle in these investigations, that if a new proposition were seemingly opposed to all preconceived ideas and past experience, and if it were not readily cognizable by the philosophical inquirer, it could not be admitted, unless the testimony in its favour were in all respects so decisive as not possibly to be explained away; that if any event, or series of circumstances, *may* have been in accordance with recognized facts and laws, any contrary inference with respect to the same should, provisionally at least, be deemed inconclusive. In other words, we hold it to be unphilosophical to seek for *hidden* causes, when *obvious* ones will account for an unwonted manifestation. We shall apply this rule to the further consideration of the supposed facts of lucidity, in attempting a rational explanation of some phenomena that may have given rise to these vain imaginings, as for the present we assume them to be.

Whatever may be the actual amount of folly and roguery identified with the facts of mesmerism, it is yet difficult to conceive that there have not been, occasionally, certain natural facts in somnambulism, which, by misinterpretation, have first suggested the idea of lucidity: since either a counterfeit or exaggeration presupposes commonly some actual and genuine existence as its prototype. How is it then that so many men, of undoubted honour and ability, of various countries, should, with such uniformity, through a series of years, go on with their announcements of clairvoyance, intuition, and prevision? Is it not likely that *something* has occurred to furnish at least an outline for the imagination to fill up and to colour? In the immediate sequel, we shall suggest some explanation of this difficulty; premising, however, that what we advance is mainly hypothesis, intended to furnish a possible key to the true solution; and that our remarks are offered, for the most part, as hints to those whose opportunities may enable them to test their value, by direct investigation of the real facts of the case.

We shall first inquire into the circumstances which may have originated the notion that somnambulists see at times otherwise than by means of the usual organs. Is it not that, in some instances, the sensibility of the retina may be so exalted as to enable the patient to *see* in a comparatively dark medium, one in which clear sight in the natural state would be impossible? In one of Gassendi's spontaneous cases, mentioned in a previous quotation, the somnambulist found his way readily in dark nights; but, on awaking during any of these perambulations, he was obliged to wait till daybreak from inability to see. This explanation would harmonize with the law of vital compensation; some senses in the sleep-waking state being in the most profound torpor, it is no unreasonable supposition that the *vis nervosa* may, under such circumstances, concentrate itself in the visual apparatus. This notion was entertained by Dr. Mason Good, as appears from the following observations which occur as a note in his translation of Lucretius:

> "The somnambulist, or dreamer, who is accustomed to walk in his sleep, will be able to make his way towards any place to which the course of his dream directs him, with the most perfect ease, and without the smallest degree of danger. He will see as clearly, and perhaps more so, as if generally awake: yet, from the very exhaustion, and, of course, increased torpidity of the other organs, in consequence of an increased demand of sensorial power from the common stock, to support the action of the sense and muscles immediately engaged, every other sense must necessarily be thrown into a deeper sleep or torpidity than on any other occasion. Hence the ears will not be roused even by a sound that might otherwise awake him; he will be insensible, not only to a simple touch, but a severe shaking of his limbs, and may even cough violently without being recalled from his dream. Having accomplished the object of his pursuit, he may safely return, even over the most dangerous precipices, for he sees them distinctly." (Vol. ii, p. 141.)

We are aware that other explanations are suggested of the facility with which somnambulists perform many of their feats in the dark; and the ultra-mesmerist would contend that it was owing to the spontaneous development of clairvoyance. For our own parts, we take the explanation which appears to us to constitute the simplest solution of the difficulty,—exaltation of the visual sense, one which, whilst adequate to its purpose, corresponds with past experience and general analogy.

We believe that some such clairvoyance is occasionally displayed in other than somnambulistic disease. In the year 1812, Dr. James Curry, physician to Guy's Hospital, related to the Medico-Chirurgical Society the history of a case of remitting ophthalmia occurring in his own person: the account is published in the third volume of the 'Transactions;' and from this we take the following extract:

> "The retina became so exquisitely sensible, that I could not bear the smallest ray of light; and I could discern every article of furniture in a room so completely darkened that other persons were obliged to grope their way in order to avoid the table and chairs." (p. 352.)

May not such exaltation of vision be developed occasionally in artificial, or mesmeric, somnambulism? And, if so, can we not understand from such a fact, how men first came to think of such a thing as clairvoyance?

We shall now proceed to speculate concerning the origin of the averments respecting *intuition*, or the attainment of information in the sleepwaking state otherwise than in the ordinary way through the senses. We are told that, when this power is developed in a high degree, the somnambulist will, amongst other things, speak and understand languages never learnt, and manifest acquaintance with sciences and individual circumstances, of which all was, and had ever been, ignorance in the waking-state. As in the case of clairvoyance, we have a difficulty in supposing that no circumstance has ever arisen, supplying, by misinterpretation, the rudimentary idea whence so wonderful a doctrine has developed itself. To those who at any time may have an opportunity of witnessing some *reputed* case of intuition, we present the following remarks and illustrations as possibly furnishing the guiding thread to the true explanation of the matter. The mesmeric notion in question may, we conceive, have taken rise from a well known psychical phenomenon which evinces itself, not only in somnambulism, but even in common dreams, and which is defined by Dr. Abercrombie as "the revival of old associations respecting things which had entirely passed out of the mind, and which seemed to have been forgotten." We will explain our meaning more at length by a few illustrations. It was our lot to pass the sweetest period of childhood with a beloved relative, whom we lost whilst in our thirteenth year. Our reminiscences of those happy hours are delightful indeed; but, whilst awake, we never can, however wishful, imagine to ourselves the exact features, and their expression, of our early friend; we do this occasionally in our dreams, yet the picture ever fades from memory on awaking, seldom remaining more than a few minutes. Again, whilst we were at a village school, when about seven years old, the noise and confusion became one day such, that the master, not knowing where to inflict the appropriate penalty, condemned every scholar to learn by heart a certain verse from the Old Testament. We have never forgotten that verse. Some years ago, however, we could not, do what we would, ascertain the particular part of scripture where this memorable verse occurred. We tried, and puzzled our head, for several days, but it was all in vain. In our sleep, one night, the problem was solved. We dreamed of Jeremiah, chapter and verse; and, on awaking, we made an immediate and eager appeal to the proper quarter, and to our surprise, at the time, ascertained that our vision had been correct. Far more striking examples than these are on record; Dr. Abercrombie, in his work on the Intellectual Powers, gives the following as having occurred to a particular friend of his, and to be relied on in its most minute particulars:

> "The gentleman was at the time connected with one of the principal banks in Glasgow, and was at his place at the teller's table, where the money is paid, when a person entered demanding payment of a sum of six pounds. There were several people waiting, who were, in turn, entitled to be attended to before him, but he was extremely impatient and rather noisy; and being, besides, a remarkable stammerer, he became so annoying, that another gentleman requested my friend to pay him his money and get rid of him. He did so, accordingly, but with an expression of impatience at being obliged to attend to him before his turn, and thought no more of the transaction. At the end of the year, which was eight or nine months after, the books of the bank could not be made to balance, the deficiency being exactly six pounds. Several days and nights had been spent in endeavouring to discover the error, but without success; when, at last, my friend returned home, much fatigued, and went to bed. He dreamed of being at his place in the bank, and the whole transaction with the stammerer, as now detailed, passed before him in all its particulars. He awoke under the full impression that the dream was to lead him to the discovery of what he was so anxiously in search of; and, on examination, soon discovered that the sum paid to this person in the manner now mentioned, had been neglected to be inserted in the book of interests, and that it exactly accounted for the error in the balance."

If space would allow, or if it were needed by the argument, we could bring forward instances without number of persons in delirium, dreams, and somnambulism, accomplishing many things attempted in vain whilst in the natural state—long-lost ideas and trains of thought recovered and perfected, languages learnt in infancy but utterly forgotten, spoken once more. In some forms of insanity, certain powers of the mind will at times become unusually energetic and vivid, as exemplified in the narrative given by a patient of Dr. Willis's, after recovery. We take the following quotation from Dr. Hibbert's 'Philosophy of Apparitions,' a very curious and interesting book:

> "I always," the patient relates, "expected with impatience the accession of the paroxysms, since I enjoyed, during their presence, a high degree of pleasure. They lasted ten or twelve hours. Everything appeared easy to me. No obstacles presented themselves, either in theory or practice. My memory acquired, upon a sudden, a singular degree of perfection. Long passages of Latin authors recurred to my mind. In general, I have great difficulty in finding rhythmical terminations; but then I could write in verse with as much facility as in prose." (p. 77.)

All these things to us seem reducible to one principle—morbid exaltation of some faculty or faculties, compensating, in many cases, for torpor in others; a principle in perfect accordance with analogy and the recognized laws of any physiology or mental philosophy with which we have any acquaintance.

Although acknowledging the supposition to be entitled to less consideration than the preceding, it may be questioned whether the alleged ability of mesmerised somnambulists to answer questions propounded in an unknown tongue, might, by an effort, be admitted as *possible*, on presentation of full and unexceptionable testimony to the fact, and as explicable on the same general principle. The alleged capacity *might* arise, in somnambulism, from elevation of the power by which we all, in a lower degree, become acquainted with the thoughts and feelings of another through the natural language of expression and attitude; in a word, that the comprehension, in the case supposed, exists irrespective of spoken language altogether, and comes from the tone in which they are accompanied.

We have a few words to say on the subject of *prevision*, respecting which our remarks are again offered simply as what we deem to be reasonable speculation. And, in the first place, do somnambulists ever seem to predict at all? In the course of our reading, both upon spontaneous and artificial somnambulism, we have met with some apparently well-authenticated examples, where the patients, in this condition, have announced, beforehand, the particular day and hour at which paroxysms of an epileptic or hysterical character would come on. For reasons which we shall proceed to state, we are, however, of opinion that here there has not been *prevision*, but *preordination*; that is to say, we consider the vision in such cases not to have been prophetic of the fit, but the cause of its occurrence. Many instances are on record where individuals having been told, or having dreamed, or, in some way or another, having received the impression of their speedy death, the effect upon the mind has been such as to render the foreboding effective in the production of the result. Nay, cases are narrated where persons have died at the anticipated moment, as if from the very depth and intensity of the mental anguish. A person with urgent business at some unusually early hour, will often, contrary to custom, awake exactly at that same hour. In all these results, the event is not, in our judgment, foreseen so much as it is preordained, or brought about by the anticipation itself. Precisely in this category do we place the instances of prevision, if the facts have really occurred as related. But we shall be met with the objection, that, when prevision takes place in somnambulism, the patient, in the natural state, has neither knowledge of any expected paroxysm, nor recollection of the prediction. In reply to this, we beg to observe that it is a fact sufficiently notorious, that somnambulists, though frequently oblivious of all acts done or trains of thought experienced in their sleepwaking state, do often remember all these, and refer to them as so much dreaming; somnambulism being, without doubt, some modification of an ordinary dream. Dr. Prichard furnishes us with a case in illustration, related by Horstius, as below:

> "A young nobleman in the citadel of Brenstein, was observed by his brothers, who occupied the same room, to rise in his sleep, put on his cloak, and having opened the casement, to mount, by the help of a pulley, to the roof of the building. There he was seen to tear in pieces a magpie's nest, and wrap the young birds in his cloak. He returned to his apartment, and went to bed, having placed his cloak by him, with the birds in it In the morning he awoke, and related the adventure as having occurred in a dream; and was greatly surprised when he was led to the roof of the tower and shown the remains of the nest, as well as the magpies concealed in his cloak."

Similar statements and cases are given in accounts supplied by writers on superinduced, or magnetic somnambulism; and, as will be seen from a previous extract, Dr. Passavant relates a case where "it depended upon her will to *remember or not*, on awaking, these interior observations." Still it may be said that the parties themselves evince total ignorance of any prediction of an expected fit. We must here remind the reader that when we have to deal with anomalously-hysterical persons, there is always reason to suspect deception; and what is more likely to lead to the manifestation of this characteristic than an expected attainment of a reputation for something verging on prophecy? Yet may it be contended that fear or anticipation will not lead to the result; this last objection will hardly arise in a medical quarter. Dr. Copland states: "I have no doubt of the fit being often renewed at pleasure, almost as readily as tears may be shed by recalling or adverting to various feelings, emotions, or circumstances;" and adds, "I have seen instances which have convinced me of the fact." Under all these circumstances, then, and in the above view of the case, we reiterate our hypothesis, that if anything like *prevision* ever do occur in somnambulism, it is *preordination.*

In the impossibility of speaking from the facts of the case, we shall not enter into the possible mode of explaining away other magnetic wonders,—the higher order of lucid phenomena—such, for instance, as intuitive knowledge of remote and long past occurrences, of the bodily and spiritual condition of persons at a distance, and unknown when awake, the state of things in the stars, and the like, because little, we think, need be said with respect to them, except that *they are incredible.* We may, or may not, admit their possibility as *natural* facts; that is a separate question: independently, however, of any conclusion to be drawn from the wild and extravagant character of the statements themselves, the evidence, on which they rest is grievously defective in every just requirement; which circumstance, if space would allow, might readily be demonstrated.

Here we may not inappropriately observe that a point where the ultra-mesmerists have ever seemed to us most weak and assailable is this: they bring forward what, at first sight, seems good evidence of certain wonders which, with some difficulty, one may allow to be *possible;* but then the same evidence is adduced in support of what few besides themselves could at all admit to be so, excepting as a miracle. As an illustration of our meaning, the following example occurs to us. We take the account from Dr. Elliotson's paper, on Alexis, in the January number of the 'Zoist,' for the present year. A gentleman had been bitten by a dog; the fact was never revealed to living mortal; the wound had long since healed; a scar only remained. The gentleman visits Alexis who, on being questioned, *sees* the scar although covered by the clothes, and declares the fact of there having been a wound. Let us concede the credibility—at least the possibility—of the story thus far. But the history goes on to relate how, when Alexis was asked respecting the *origin* of the wound, its entire history, although of years long past, becomes revealed!

"If not by ball, sword, or bayonet, how was it done?" A long, very long pause. At length a sudden light appears to stream in upon him. He begins in a low tone, as if muttering to himself. 'Oh, I see; yes, you get off your horse; you open the yard gate; the house is so and so; you cross the yard; you go to ring at the bell—(he becomes quite excited)—Oh! there it is. *It* comes jumping and barking towards you; *it* is such a colour; *it* jumps on you; *it* seizes you; *it* bites you here," pointing to the hip! imitating the dog and all its movements; "it is, it is, (he is so agitated with the vivid scene that he cannot get at the word, or he sees obscurely, at last he gets out) it is a great dog!" (p 495.)

Thus it is, in the whole of this matter of lucidity; the witnesses are as good, positive, and numerous, in attestation of the very wildest stories, as of those which draw less largely upon our credulity. Does not this circumstance destroy the value that might otherwise attach to some of the evidence?

Still, that persons of undoubted ability and scientific attainments should continue to attest the reality of lucid somnambulism, is to many persons a subject of serious perplexity; and the question recurs: can it, after all, be otherwise than true? Do not these men—honest and clever—profess to have seen it? Here *is* a difficulty, without doubt, but only a minor one. As Cabanis wisely observes, there are certain errors of which only men of talent are susceptible. The reason of which fact may probably be found in the ardour of imagination which characterizes some individuals of high mental endowment. Enthusiasm, inquisitiveness, and eagerness for novelty, hurrying such persons to premature conclusions, they seem to cling to these, as sources of wonder and delight, with most affectionate tenacity. But, indeed, in all ages, a love of the marvellous has originated follies without number; follies which are the peculiarity of no one class. They are often conceived by able, curious, and imaginative minds, and the multitude receive them on trust. The ancients had their oracles and their auguries, in which some of their very sages had confidence; later times have witnessed a belief in witchcraft not only by the ignorant and uneducated, but by many among the learned and accomplished, such men, for example, as Sir Matthew Hale. A belief in the *second sight* of Scotland was once most general through large tracts of country, and its reality was credited by persons whose judgment was and is respected upon most other subjects. Amongst these was no less a personage than Dr. Samuel Johnson. Multitudes of individuals, for ages, testified to the miraculous efficacy of the Royal touch. We assert fearlessly that the power of clairvoyance is not at this time so well supported by evidence as that of the Royal touch once was—or even that of riding through the air on a broomstick. Yet, all these things are now discredited; and why are they so? Plainly because their seemingly preternatural character demands for the proof an *extraordinary* kind of evidence which the recorded accounts do not exhibit; although they are by no means deficient in *ordinary* evidence. Hale for Witchcraft, and Wiseman for the Royal touch, were authorities, in their day, certainly equal to Elliotson and Townshend at the present time. Why should we yield assent to the latter, and not to the former? We know that it has been the fashion to claim for the nineteenth century a comparative freedom from the folly of credulity; but we very much think that our superiority in this respect equals not the vaunt; we suspect that, however the *objects* may change, the *disposition* remains but little diminished.

> "Der kleine Gott der Welt bleibt stets von gleichem Schlag,
> Und ist so wunderlich als wie am ersten Tag."—FAUST.

But, in point of fact, what says the history of days not remote, nay of the very day in which we live, to this vaunt of superiority? The following is a true chronicle of witchcraft and its fortunes, in the last few years of the seventeenth century, as minutely detailed, with all the names and circumstances, in Dr. Hutchinson's 'History of Witchcraft.'

1691. Three women committed for witchcraft; one died in gaol, two tried and acquitted. "Several tried by swimming, and some drowned in the trial."

1692. "Nineteen hanged at Salem in New England; one pressed to death; eight more condemned; fifty confessed themselves witches and were pardoned; one hundred and fifty were in prison."

1693. Two women committed in Suffolk; one died in prison, the other tried and acquitted.

1694. A woman tried at Ipswich and acquitted.

1695. A woman tried at Launceston and acquitted.

1696. A woman tried at Exeter for bewitching children. "The mother of the children deposed that one of them walked up a smooth plastered wall, till her feet were nine foot high, her head standing off from it." Notwithstanding this evidence and the equally attested fact of her having "a nipple on her shoulder which was sucked by a toad," the woman was acquitted.

1697. "About eight and twenty were accused by a girl eleven years old, in the county of Renfrew in Scotland. One old man died in prison; another was found hanged in gaol; five saved themselves by confessing, and upon their testimony seven were executed."

1698. A woman was "tried at the Old Bailey, and set in the pillory, for pretending to be possessed. About eleven in all have been tried and acquitted."

1700. A woman tried at Guildford and acquitted.

Nay, little more than a hundred years ago, in 1716, in the palmy days of English literature, in the days of Addison and Pope, a woman and her daughter (aged *nine*,) were hanged at Huntingdon for selling their souls to the devil! (See reprint of 'Tryal of Witches,' in 1664, p. 28.)

Barrington, in his observations on the Statute 20, Henry VI., estimates the number of persons put to death in England for witchcraft at 30,000.

It is only about twenty years since, that the highways of Sussex and Hampshire, and the passage-boats from Southampton and Portsmouth were daily crowded and loaded by persons thronging to the Isle of Wight to be cured by the *touch* of a common sailor!

In a work published by a British peer in 1841,* we have marvels recorded as then being transacted, and authenticated by numerous witnesses, which emulate the loftiest legends of the middle ages, and some of them in direct opposition to the laws of physics. And at this very moment there is a German bishop instituting solemn festivals in honour of the discovery of the sacred vestment (there shown) actually worn by Jesus Christ!

Nay, more marvellous still, in the year 1840 we find a British physician and one or two surgeons vouching for the truth of direct communications from Heaven, both by word and deed, vouchsafed openly, by day and night, to a poor ignorant girl of Sunderland.

We have not room to transcribe the noises, songs, prayers, scriptural exhortations, &c. described by this narrative to have been heard by all concerned; but we will extract a few instances from Dr. Clanny's own narrative of "facts," just to give the reader a taste of things credited even by doctors of physic in this our land and this our day.

> "At our next interview we became more intimate, and I asked her why she was so backward with me at our first meeting after her recovery? Her reply was very remarkable; she half whispered to me in a childish voice, 'You were a

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* Letter from the Earl of Shrewsbury descriptive of the *Estatica* and *Addolorata*; London, 1841.

stranger to me, for I had never seen you before that time, and I saw an angel standing at your back.'

"I took an opportunity of asking whether she could give me a few texts from the holy Scriptures, to which she immediately assented. Upon taking a slip of writing paper, and a pencil from my pocket, she stood firmly before me, and looking upwards, gave the following texts, as rapidly as I could write them down.

"Psalm lv, 17; Psalm xcix, 2; St. Matthew, xxviii, 15; 1st Corinthians, the whole of the xv chapter; 2d Corinthians, the whole of the xiii chapter; 2d Thessalonians, ii, 14, 17, inclusive; Hebrews, ii, 15; 2d St. John, 4, 5; Revelation, xxii, 12, 18, inclusive.

"Some days afterwards I inquired of Mary Jobson, how it occurred that she had the texts so ready; when she informed me, that about half an hour before my arrival at her father's house, a voice informed her of my intended visit, and that I would ask her for some Scripture texts. I then took leave to ask her to inform me whose voice it was, when she instantly replied, that the voice commenced to speak in the following words, 'I am the way, and the truth, and the life: no man cometh unto the Father but by me.' This I knew to be the language of the Saviour of the world, as we find recorded in the New Testament. I then asked her whether my name had been mentioned by any other voice; when she informed me that such was the case, at two different periods, at one time by Saint Paul, and at another period by Saint Peter.

"I asked Mary Jobson to oblige me by informing me whether, as I conjectured from her fixed attitude, she read the texts which she gave me on that momentous occasion, in the atmosphere. Her reply was, that a figure clothed in white apparel, having a somewhat dark complexion, stood before her, and pronounced the texts to her in a deliberate manner whilst I wrote them down: I need scarcely add that I was not permitted to see the figure, or to hear the words spoken.

"I may here mention, that soon after Mary Jobson was restored to health, her mother showed me the figures of the sun and moon, upon the ceiling of the room in which her child lay for so many weeks; and though her husband, in his state of unbelief, had white-washed over these figures, nevertheless they were still very distinct, and appeared to me to be most accurate in their outlines.

"If any man presume to say that unembodied spirits can have nothing to do with us, and that they are not identified with human affairs, I will fearlessly tell him that he speaks like an idiot, and begs the question like a false reasoner."*

In reading these and other accounts of preternatural visitations to man, and of the possession by man of superhuman powers, it is impossible not to be struck with one remarkable feature which obtains in all, viz., the lamentable poverty of the performance, after such a magnificent overture. The paltry knot that is undone is ever most unworthy of the fingers of the god; the ridiculous animal produced, is invariably a disgrace to the labouring mountain.—The devil appears—and lo! a poor, half-starved, old woman sells her soul to him, merely to get a pennyworth of her neighbour's milk, or to have a ride on an uncomfortable broomstick. The saints and angels, and even the higher powers, come down from heaven to Dr. Clanny's patient—to do what?—to give a few runaway knocks at a door,—to twirl a bit of pasteboard on a chimney-piece,—to scratch pictures of the sun and moon on a dirty ceiling,—or, at most, to sing unintelligible hymns with a Northumbrian burr. In like manner, our clairvoyants, instead of settling for ever, as they might easily do, all our doubts and difficulties in astronomy, geology, chemistry and physiology;—instead of unfolding the secrets of the cabinets of kings and prime ministers, and thus benefiting their country, or making their own or their masters' fortune by forestalling Rothschild or Moses and Son in the purchase of bank-stock or railroad shares; nay, instead of even doing such little matters as the hazel-rod diviners used to do, the pointing out the presence of a nice spring of water or of a productive tin or copper mine, these provoking people will persist in putting us off with such feats as counting the pictures in our dining-rooms, describing the colour of night-caps and doublets, laboriously misspelling words inside rumpled letters, or on gold rings in jewellers' cases,—and a thousand other things of equal importance, and which we all knew before. We have never yet heard a satisfactory explanation of this perversity of the seers. It is in itself almost enough to make their best friends cut their acquaintance. At any rate, we are resolved that when WE have the good luck to have a clairvoyant of our own, we shall not be so humble-minded as some people.

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* A Faithful Record of the Miraculous Case of Mary Jobson. By W. Reid Clanny, M.D. F.R.S.E. M.R.I.A., &c. Second Edition. Newcastle-upon-Tyne, 1841.

After such details as we have just given, have we any right to boast so much of our superiority in matters of belief over our predecessors? Or is it very unlikely that the men of the next century may look back to some of *our* doings with the same wonder that we regard the recorded marvels of the last century? Nay, to say nothing of the ready credence afforded by so many to the greatest extravagances of mesmerism,—the actual state of religious belief and practice among large bodies of persons in this country, would give countenance to the expectation that the doctrine of *possession* at least, if not witchcraft, might ere long be revived once more, and flourish in all its pristine glory. There seems no good reason for thinking that the remark of her Majesty's chaplain in the last century might not be equally applicable in the present. "I make no great doubt," he says, "but that we have as many devils now amongst us as they had in other ages; for we have as many temptations, and lies, and thefts, and adulteries, and murders, that are the devil's works; but our witches, for the present, are gone after the poet's gods and modern fairies. But I must add, that they are not so far from us, but that, if we should have a prince, and judges and juries, and witch-finders, of the same principles, that found out so many before in two years' time, in all probability they would find as many now."*

In the whole subject of somnambulism, there is, undoubtedly, truth sufficient to engage the regards of the curious; enough that is strange and difficult of explanation to dazzle, and to excite the wonder of the enthusiastically imaginative; and occasionally the most gifted are brought, by a gradual process, to sacrifice at the shrine of Lord Bacon's *idola theatri*, which, in the language of the great father of modern philosophy, have gained influence over the mind "from the perverted laws of demonstration." There is a fund of wisdom applicable to our present argument in the following passage, which we take from the 'Novum Organum:'

> "When the mind is once pleased with certain things, it draws all others to consent, and go along with them; and though the power and number of instances, that make for the contrary, are greater, yet it either attends not to them, or despises them, or else removes them by a distinction, with a strong and pernicious

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* An Historical Essay concerning Witchcraft. By F. Hutchinson, D.D. Chaplain in Ordinary to Her Majesty. London, 1718, p. 50.

prejudice to maintain the authority of the first choice unviolated. And hence, in most cases of superstition, as of astrology, dreams, omens, judgments, &c. those who find pleasure in such kind of vanities, always observe where the event answers, but slight, and pass by the instances where it fails, which are much the more numerous."

The following passage from Mr. Townshend's 'Facts of Mesmerism,' suggests the direct application of this philosophy to the matter now under discussion; it looks very like *confessions*, as a perusal of the Reverend author's entire work forces the inference that he is himself the great sublime he draws:

> "There is in the sensations of him who finds that he is capable of exercising the mesmeric influence that peculiar charm which ever waits upon the development of a new faculty. Even the swimmer, who learns at length to surmount the boisterous surf, or to stem the adverse stream, will revel in the consciousness of awakened power. How much more must the mental enthusiast riot in the display of energies so long concealed, so wondrously developed! Self-love adds her flattering lure to the attractions of novelty; the pride of exerting an influence over others awakens in his breast. It is he himself who is the author of his own enjoyment; and the fairy scenes appear to him fairer still, because they are of his own creating. Unexpectedness, too, that principal ingredient of pleasure, yet more entrances and bewilders the astonished novice, who perceives such mighty effects resulting from his employment of a few and simple means. He feels that he is 'greater than he knows,' and he advances into the yet unconquered province that lies before him, with all those alternations of rapture and surprise which agitate, yet please the explorer of strange regions. He trembles—he hesitates—he catches a glimpse of a new prospect. . . . . . . . . Thus excited, how shall we subside into the calmness, wherein alone the mind can compare, can select, or reject? How, from the very heights of contemplation, shall we stoop to the observation of petty facts—to the detection of fallacies—to the routine of ordinary examination? Deeming that we know all things by intuition, how can we condescend to reason? Rather are we tempted to frame some vast and all embracing theory, to rush at every subject, and, consequently to fail in all. . . . The barrier of prudent hesitation is cast down, and his mind is left a prey to the invasion of every idle fancy. That he was once even of a sceptical spirit will profit it nothing. Rather, with that propensity to rush into extremes which is a part of human imperfection, the more incredulous he has hitherto been, the greater will be his rebound to credulity." (p. 24.)

We here close our review of the general character of the facts of mesmerism. A few words will suffice to recapitulate the affirmative inferences to which we have already come respecting them. They are these: The phenomena in question are, in some instances, just what they seem to be, states of disease, hysteria or somnambulism, superinduced by artificial agency, yet constituting under such circumstances no pathological *speciality*. Whether such abnormal conditions of the system arise from inappreciable or internal causes, and then called *spontaneous;* or whether they are brought about by obvious, outward, and designed agency, and, in that case styled *mesmeric;* they are essentially the same hysteria, and the same somnambulism, differing only in their etiology.

It now only remains for us to discuss the theories which have been proposed in explanation of the facts here admitted. What is mesmerism? By what agency are such curious states of the system accomplished? In the language of the Rev. Mr. Townshend, what is the mesmeric medium? Do the effects, according to the more prevalent theory, come from the transmission of some vital fluid to the patient from the person of the operator? Or, is it that an impression is made upon the patient, through some all-pervading ether, by the will or by the gestures of the magnetiser, according to the original notion of Mesmer himself? In one word, is mesmerism, in the language of Dr. Elliotson, owing to the activity or operation of some *occult* influence possessed by one animal body over another?

These considerations suggest materials for an inquiry of great interest and importance; and into this, as a pure matter of evidence, we now propose to enter; guided by the same principles as those by which we have been directed in the other divisions of this investigation.

If the mesmeric effects can in all instances be shown to follow upon *sensible* impressions, any theory, we apprehend, which involves an *occult*, hitherto unrecognized influence, need not be admitted. In the interpretation of all complicated facts, simplicity must prevail, and old principles be drawn upon when adequate to the solution, and new ones be assumed only in the opposite case. Now, every well-informed mesmerist will readily grant that all the results accomplished by the presumed medium, or occult agency, may arise independently thereof; further, that by influencing appropriately, and through the senses, the moral and physical state of the subject, mesmeric phenomena will develope themselves; and that whether, or not, imagination (this term being employed in its widest sense) always brings about the characteristic conditions, it is potent enough to do so in many cases. We shall adduce a few facts in demonstration of these propositions.

M. Bertrand, in the course of his work on animal magnetism, gives the subjoined recital, showing the power of imagination in the induction of somnambulism:

"I had, amongst others, a female somnambulist who exhibited very curious phenomena, of a character not to be doubted, (one of these was an absolute insensibility to every kind of excitement.) Being after some time compelled to be absent, I left her in the hands of one of my friends, who was very anxious to continue the treatment. Up to that time, I had heard a great deal said of the substances to which the magnetic virtue was communicated .... not having faith in all that was told me, I had paid no serious attention to this matter; later on, the perusal of a great number of works, and my conversations with magnetisers who doubted of nothing, suggested to me to make trial of this power, and to see if I could not influence my somnambulist, in spite of the distance of a hundred leagues which separated me from her. I wrote in consequence to my friend, and sent to him a little magnetised note, which I prayed him to place upon the stomach of the patient; I indicated the epigastrium, because I had always heard this locality mentioned in these experiments. The experiment was made; it succeeded, and the patient had a sleep accompanied by all the customary phenomena. However, I did not conceal from myself that the patient having been apprized of the experiment which we were anxious to try, it might be that the sleep, although quite real, had been produced by her imagination alone. I made then another trial to know what to make of it. I wrote a second letter which I did not magnetise, and I sent it as if it had been magnetised, warning the patient that it would cause her to fall into somnambulism. In fact, she fell into this state, which even this time presented all the characters which had been usual."

"I communicated this result of my experiment to the magnetisers whom I frequented; they appeared greatly surprised thereat, and, not being able to recognize the power of imagination in a manner so marked, they pretended that if the last letter had produced the effect which I said, it was only because, in writing it, I had (even without the intention) impregnated it with my fluid. I set about an experiment which should teach me what to think of the thing. I asked one of my friends to write a few lines in my place, and to strive to imitate my writing, so that those who should read the letter should mistake it for mine, (I knew he could do so.) He did it: our stratagem succeeded, and the sleep was produced just as it would have been by one of my own letters."

Mr. Braid, of Manchester, who is understood to have devoted much attention to this subject, states, in the course of his work on "Neurypnology," that he produces all the genuine phenomena of mesmerism, more rapidly, more surely, and more uniformly, than the animal magnetisers do, by his process of "hypnotism,"—a designation applied by himself to his peculiar procedure, one in which the patient is set to mesmerise himself. We extract the following from Mr. Braid's book:

> "Take any bright object (I generally use my lancet case) between the thumb and fore and middle fingers of the left hand; hold it from about eight to fifteen inches from the eyes, at such position above the forehead as may be necessary to produce the greatest possible strain upon the eyes and eyelids, and enable the patient to maintain a steady fixed stare at the object. ...... It will generally be found, that the eyelids close with a *vibratory* motion, or become spasmodically closed. After ten or fifteen seconds have elapsed, by gently elevating the arms and legs, it will be found that the patient has a disposition to retain them in the situation in which they have been placed, if *he is intensely affected*. If this is not the case, in a soft tone of voice desire him to retain the limbs in the extended position, and thus the pulse will speedily become greatly accelerated, and the limbs, in process of time, will become quite rigid and involuntarily fixed. It will also be found, that all the organs of special sense, excepting sight, including heat and cold, and muscular motion, or resistance, are at *first* prodigiously *exalted*, such as happens with regard to the primary effects of opium, wine, and spirits. After a certain point, however, this exaltation of function is followed by a state of depression far greater than the torpor of *natural* sleep. From the state of the most profound torpor of the organs of special sense, and tonic rigidity of the muscles, they may, at this stage, *instantly* be restored to the *opposite* condition of extreme mobility and exalted sensibility, by directing a current of air against the organ or organs we wish to excite to action, or the muscles we wish to render limber, and which had been in the cataleptiform state. By mere repose the senses will speedily merge into the original condition again." (p. 27.)

Mr. Braid gives examples of somnambulism, and other unwonted conditions of the nervous system, resulting from the employment of *hypnotism*, just as we read of these things in the mesmeric books; and he appears, in some of his experiments, to have taken away the possibility of any magnetic emanation from himself, by leaving the apartment in which was the subject of experiment, after having given the appropriate directions regarding the fixed stare. Mr. Braid has exhibited his method, not only in London and Manchester, but in several of the principal towns in the kingdom. On one occasion, we, ourselves, saw nearly twenty persons all staring at a cork bound on the forehead of each; and, in almost every case, was there an effect, real or simulated, analogous to that which obtains in more purely magnetic operations.

Mr. Catlow, also of Manchester, a sort of rival, it seems, of Mr. Braid, in this mesmeric affair, has lectured extensively on this subject; and, according to the published accounts which we have seen, this gentleman produces sleep and the other phenomena, by slowly and soothingly brushing the forehead with a soft brush, attributing the effects to continuity of gentle impression upon one or more of the senses, coincidently with concentration of attention, on the part of the patient, to the process going on. Mr. Catlow, we know, has induced by his method genuine mesmeric states, (allowed to be such by zealous magnetisers,) although he himself repudiates altogether the idea of exoteric animal influence.

In further exemplification of mesmeric effects, without animal magnetism, we shall record some of our own small doings in this line. We were one evening in company with a young lady who, we had been informed, had, under operation, evinced high mesmeric susceptibility. We requested permission to test this ourselves, and were obligingly permitted to do so. Accordingly, we commenced to *magnetise* the lady, by maintaining the thumbs in apposition with those of our subject, and fixing the gaze at the same time upon her eyes, with all the intensity our will could command; in a few minutes, a sort of hysteric somnolence ensued. Having satisfied ourselves thus far, we demagnetized. We next proceeded to *hypnotize* the same lady, adopting Mr. Braid's mode of directing the stare at a fixed point: the result varied in no respect from that which had taken place in the foregoing experiment; the duration of the process was the same, and its intensity of effect neither greater nor less. Dehypnotization again placed us where we were. And now we requested our patient to rest quietly at the fireplace, to think of just what she liked, and look where she pleased, excepting at ourselves who retreated behind her chair, saying that a new mode was about to be tried, and that her turning round would disturb the process. We very composedly took up a volume which lay upon a table, amused ourselves with it about five minutes, when, on raising our eyes, we could see, by the excited features of other members of a little party that were assembled, that the young lady was once more *magnetised*. We were informed by those who had attentively watched her during the progress of our little stratagem, that all had been, in every respect, just as before. The lady herself, before she was undeceived, expressed a distinct consciousness of having felt our unseen passes streaming down the neck.

It may be contended that, although mental impression and isolation of sense may often induce mesmeric states, the existence of another agency capable of doing the same thing is not disproved; just as the ability to create a diarrhea in some cases by sudden fear, in most by jalap, does not discredit the efficacy of croton oil. Very true; but, in ordinary magnetic experiments, the assumed agency, the occult influence, stands not alone; it is in conjunction with other conditions of proved efficacy in the production of the effects in question. If the foregoing facts, selected from multitudes of a like kind, be admitted, it must be conceded that no experiment can prove the exercise of any foreign vital influence, but a successful operation upon an individual who has no knowledge of what is going on, nor even a thought at the time bearing upon the matter: the result must come wholly unanticipated.

Examples, however, of magnetic operations with successful results upon patients near and at a distance, are recorded, where they themselves have been altogether unacquainted with what was intended, where, by the unexpressed will of the operator, sleep and other effects have been induced on the part of subjects intimately *en rapport* with their magnetisers. After the copious details on other branches of this inquiry which we have already given, we have no space for the analysis of these instances with a view to detect the possible source of fallacy; nor, indeed, do we think it necessary. Considering the extraordinary credulity and excitable enthusiasm of the professed animal magnetisers; knowing, moreover, the little care and precaution which are commonly taken to shut out any probable error or mistake; we candidly acknowledge that we receive all these accounts with the greatest suspicion. Of course, when men like the Rev. Mr. Townshend attest these things, (and this gentleman, in his book, gives several instances of unconscious mesmerism,) we have every confidence in the *integrity* of the narrator; but, on grounds which our limits will not allow us to submit, we think that due measures had not been taken to secure an absence of all anticipation of a coming effect. Besides a distrust in the general accuracy of mesmeric details, we subjoin certain reasons of our own, resting upon experience, for discrediting these particular stories.

On one occasion, M. Lafontaine advertised that he had a female subject in whom he had induced, and could again induce, sleep, whilst he was in another room, and without her consciousness. We attended this exhibition. Certain precautions were taken, and the experiment was confessed, by M. Lafontaine, to have failed. About two years ago, an intelligent and a well-educated friend of ours had a female servant whom he had repeatedly thrown into a sleepwaking state, and on whom he had tried a variety of experiments, many of which we ourselves witnessed. We were at length informed that he had succeeded in magnetising her from another room, and without her knowledge; that he had paralysed particular limbs by a fixed gaze unseen by the patient; and we hardly know what besides, These things were circumstantially related to us, again and again, amongst others, by the medical attendant of the family, a most respectable and intelligent friend of our own. We were yet unsatisfied: we considered that these experiments were so constantly going on, parties were so often going up to the house to witness these things, that the presence of a visitor, or the occurrence of anything unusual, was sure to excite expectation of some mesmeric process. We were invited to come and judge for ourselves, and to propose whatever test we pleased. Now, had we visited the house, we should have felt dissatisfied with any result, and we therefore proposed the experiment should be made at our own residence; and it was made under the following circumstances. The gentleman early one evening wrote a note, as if on business, directing it to ourselves; he thereupon summoned the female servant (the mesmeric subject) requesting her to convey the note to its destination, and to wait for an answer. The gentleman himself, in her hearing, ordered a cab, stating that if any one called he was going to a place named, but expected to return by a certain hour. Whilst the female servant was dressing for her errand, the master placed himself in the vehicle, and rapidly arrived at our own dwelling. In about ten minutes afterwards, the note arrived, the gentleman, in the mean time, being secreted in another apartment. We requested the young woman, who had been shown into our study, to take a seat whilst we wrote the answer, at the same time placing the chair with its back to the door, which was ajar. It had been agreed that, after the admission of the girl into the place where we were, the magnetiser, approaching the door in silence, should commence operations. There then was the patient, or subject, placed within two feet of her magnetiser, a door only intervening, and that but partially closed, but she, all the while, perfectly free from all idea of what was going on. We were careful to avoid any unnecessary conversation with the girl, or even to look towards her, lest we should raise some suspicion in her own mind. We wrote our letter as if in answer for nearly a quarter of an hour, once or twice only making an indifferent remark, and, on leaving the room for a light to seal the supposed letter, we beckoned the operator away, and, returning, sealed the note, and dismissed the young woman, as magnetically charged as when she arrived. No effect whatever was produced, although we had been told that two or three minutes were sufficient, even when mesmerising from the drawing-room, through walls and apartments, into the kitchen. In our own experiment the intervening distance had been much less, and only one solid substance interposed, and that not completely; but here, we suspect, was the difference—the subject was unconscious of the magnetism, and expecting nothing! Another friend of ours informed us that he had, on two or three occasions, induced powerful mesmeric effects, operating in a room separate from that in which the patient (a young woman also) remained, and quite unknown to her. Ever ready to be convinced of the reality of these assumed facts, we agreed, upon our friend's invitation, to investigate the matter, proposing, however, a test of our own, and one calculated, as we conceived, to meet the exigencies of the case. Total failure once more followed.

These negative facts cannot, of course, settle the point; one positive and sure instance would more than counterbalance any amount of experience such as ours. We have adduced the above circumstances, because, whilst they exhibit the grounds of our own scepticism, they may furnish hints to others cautiously testing professed cases of unconscious mesmerism. And here, as in lucidity, we must insist that the evidence in support of their reality, involving, as they do, something that is opposed to the common consent of mankind, must be complete, and beyond suspicion, and the result absolutely unsusceptible of any other construction.

We shall but briefly notice some other circumstances which are often referred to as proof of some mysterious communication between the operator and subject, and which are thus considered to prove the *objectivity* of mesmerism. One of these is the absence of all regard or attention on the part of the magnetisee, to any one but the magnetiser, or some one with whom a *rapport* has been established. This, however, is only an occasional and apparently incidental phenomenon. We ourselves see nothing in this matter but a manifestation of the well-known circumstance of the sleepwaker being "awake to objects of attention, and torpid to things at the time indifferent." In his bed, the wearied accoucheur can sleep, in spite of thunder and other noises, but the slightest tinkle of the night-bell he at once recognizes; in the *rapport magnétique* we do but see an analogous fact, illustrated, also, in one of the examples afforded of spontaneous somnambulism, that of Castelli, in another part of this article. It has been suggested that some exoteric vital influence must be at work in *demagnetization*, seeing that the patient, having evinced insensibility to severe excitation, cannot be supposed to feel the slighter shock of currents of air, and other means of an equally simple kind, employed by the mesmerists to recover their subjects. These things, however, will receive a partial explanation in the anomalous and *peculiar* sensibility of many hysterical persons, sometimes displayed in the spontaneous affection. A case was recently related to us of a lady in hysteric disease, who was quite unmindful of many strong impressions, but became powerfully excited by the contiguity of a fly in motion. This was attributed by our informant to the current of air produced by the insect, as the patient evinced in other respects a high sensibility to the slightest atmospheric current. It happens often in spontaneous somnambulism that patients will resist numerous energetic measures resorted to for the purpose of awaking them, whilst some seemingly indifferent action will bring the thing about. We presume this to be dependent upon some curious relation between the outward impression and the inward anomalous *dream* of the sleepwaker. Thus, Muratori relates the case of one Agostino Torari, who could only be awaked in two ways, by tickling the feet, or by sounding a horn in the ear; and, by reverting to Smellie's case, it will be noticed that, however uninfluenced by many kinds of severe excitation, the patient was at once aroused by compression of the wrist coincidently with a call by name.

Traction of the magnetisee by the magnetiser has been much adduced as *proving*, if true, the theory of animal magnetism. Mr. Catlow's experiments, however, suggest that, in some cases at least, this traction is owing to the subject being sensible to the approach of warmth, even though unacted upon by other and stronger excitants. Heated irons are held in the direction of, and at some distance from, some part of the patient's body, and a movement takes place towards the source of what may constitute an agreeable feeling. The hand being cold, in Mr. Catlow's cases, exerts no attractive influence; heated, however, the effect comes. We have seen these experiments repeated, and to us they have seemed genuine. From certain experiments that we have seen we have reason to adopt several other explanations of this phenomenon, varying with particular cases, but our limits will not allow of any prolixity upon this theme. We must here, however, contend that an experiment to *prove* an occult mode of attraction must exclude sensible impressions. Dr. Darwin, in the first volume of the 'Zoonomia,' relates the following case, a *spontaneous* one, of peculiar sensibility to heat, with general insensibility. It is set forth in a letter from Dr. R. W. Darwin, having been written when this latter was a student in Edinburgh:

> "A man who had lately recovered from a fever, and was still weak, was seized with cramps in his legs and feet; which were removed by opiates, except that one of his feet remained insensible Mr Ewart pricked him with a pin in five or six places, and the patient declared he did not feel it in the least, nor was he sensible of a very smart pinch. I then held a red hot poker at some distance, and brought it gradually nearer, till it came within three inches, when he asserted that he felt it quite distinctly."

We suspect that when metals, magnetised, induce particular effects (if they ever do), it is occasionally owing to the recognition of the heat imparted in the process, and, at other times, to the imagination.

We have heard it contended, nevertheless, that community of sensation between the magnetiser and magnetised constitutes proof demonstrative of some occult link between the parties, and thereby establishes the existence of animal magnetism as a distinct agent or principle. From the accounts published of this supposed phenomenon, it seldom seems to go beyond the sense of taste; and a simpler explanation of the fact itself is suggested to our mind. In a case of this kind, which we had opportunities of carefully observing, the female subject, we had every reason to believe, was truly in the sleepwaking state; amongst other evidences of this condition, we may adduce the immobility of the widely-dilated pupil on the approach of light. The mesmeriser caused confectionary, wine, milk, water, and fruit to be placed upon a drawing-room table (this investigation took place in a private family); the various articles were tasted, and the girl generally imitated the action, and, in the majority of cases, her expressed sensations of taste corresponded with those of her magnetiser, but not always. On a second occasion, we placed on the tongue of the latter, unknown to himself, a small portion of the sulphate of quinine; no recognition whatever of this was made by the magnetisee: we had come prepared with quinine, a substance, we conceived, the taste of which would neither be imagined nor anticipated. A third time, a gentleman, whose functions had been judicial, joined us in the observation of these experiments, and took upon himself their guidance. All being ready, our learned friend directed the magnetiser to drink the water; this, we believe, was, after some questioning and delay, recognized by the patient. Milk was next taken up, but our barrister friend interdicted it by a sign, and once more pointed to the water; not water, however, but something else was alleged to have been tasted by the somnambulist. Our friend perseveringly indicated the water as the object of potation; various articles on the table, however, were stated by the girl to have been tasted in succession: and the affair was confessedly a thorough failure. What probable inference was to be deduced from the foregoing? Our own was, that the sleepwaker, characteristically attentive to the operator, felt impelled to imitate his actions, of which, as we conceive, she had some sort of perception, obtained, possibly by exaltation of the sense of hearing, and when questioned as to what she tasted, there might be a species of *dream* that she tasted what she supposed the magnetiser to have tasted. She never could have conceived that quinine was placed upon his tongue, and she did not recognize its taste; nor, after what had taken place on former occasions, would she ever dream that water, time after time, would be the material for experiment.

Mr. Newnham, whose work has just reached us, has a passage which corroborates our notion, that community of taste is a mere *fancy* on the part of the sleepwaker.

> "A similar though somewhat different phenomenon has been produced by the somnambulist receiving into the mouth something very nasty, and yet pronouncing it to be very agreeable, *under the impression that it was something very nice conveyed by a very dear friend.*" (p. 290.)

That outward impressions will influence the imagination, not only of the somnambulist, but of the ordinary sleeper, and thus give rise to *suggested dreaming*, is sufficiently well-known. We take the following from Lord Brougham's 'Discourse on Natural Theology:'

> "The facts upon this subject are numerous, and of undeniable certainty, because of daily occurrence. Every one knows the effect of a bottle of water ap-

plied during sleep to the soles of the feet; you instantly dream of walking over hot mould, or ashes, or a stream of lava, or having your feet burnt by coming too near the fire. But the effect of falling asleep in a stream of cold air, as in an open carriage, varies this experiment in a very interesting and striking manner. You will, instantly that the wind begins to blow, dream of being upon some exposed point, and anxious for shelter, but unable to reach it; then you are on the deck of a ship, suffering from the gale, you run behind a sail for shelter, and the wind changes, so that it still blows upon you, you are driven to the cabin, but the ladder is removed, or the door locked. Presently you are on shore in a house with all the windows open, and endeavour to shut them in vain; or, seeing a smith's forge, you are attracted by the fire, and suddenly a hundred bellows play upon it, and extinguish it in an instant, but fill the whole smithy with their blast, till you are as cold as on the road. If you from time to time awake, the moment you fall asleep again, the same course of dreaming succeeds in the greatest variety of changes that can be rung on our thoughts." (p. 112)

And here we think it likely is to be found the key to the *phreno-magnetic* phenomena. In our judgment, no occult influence emanates from the fingers of the mesmerist, and is transmitted, by touching various regions of the head, to the subjacent cerebral organ, exciting the same into unwonted activity; but the head of the somnambulist is touched near the region of presumed organs, and, under some circumstances, the feelings or faculties, associated in the mind of the subject with such locality on the head, are, by suggestion, excited to activity. All who have read of phreno-magnetic doings are acquainted with discoveries of hundreds of organs, just as the training of the patient *in the sleepwaking state* has stimulated the imagination, and led him to the performance of particular acts. On one occasion a gentleman, who was prosecuting experiments upon this subject, and who took our own view regarding the real nature of phreno-magnetism, remarked, in the presence of his somnambulist who was said to be ignorant of phrenology, "now we will try the organ of shaking hands," and then he placed the fingers over the region of destructiveness; immediately the hand was extended for the anticipated purpose. Ten minutes at least having elapsed, and other experiments having intervened, the operator, without a word, touched destructiveness on the opposite side of the head, and the expected result followed, the hand was again extended as before. This subject had been under the manipulations of an itinerant lecturer, who had discovered, by mesmerism, organs for climbing, swimming, excavating, dancing, and a host of others. Some of these discoveries had been made on the head of the person with whom, according to the results obtained by our friend, destructiveness was superseded by a faculty for shaking hands. Dr. Elliotson, however, says that, although *much* comes from suggestion, *all* does not, because he himself only *points* to the organs, making no contact. We refer to Dr. Darwin's case, given in a previous page, which shows that the proximity of warmth will sometimes be appreciated, even should the patient be feelingless to pricking and pinching; and, it may be that, in Dr. Elliotson's instances, the fingers radiate a sufficiency of animal heat to be recognized. Supposing all to be genuine, there is, in some such view of the matter as this, a rational explanation, at any rate, without resorting to the theory of occult influence, or animal magnetism. But again, we are told that results proving mesmero-phrenology have been obtained, where the patients knew nothing either of mesmerism or phrenology, and where, consequently, touch or approach could convey no suggestion. It may be so: but, for the reasons afforded for our scepticism on some other points, we cannot take it upon the evidence. If we had not already extended our remarks so far, and if we did not imagine that our readers would by this time have become somewhat impatient of further detail, we think that we could exhibit a possible source of fallacy in these pretended cases.

In admitting a reality in many of the facts of mesmerism, though rejecting, as unproved, the theory of animal magnetism, we do not offer to explain the rationale of their production. We believe the *modus operandi* to present no uniformity, and to be as yet incapable of a definition that will always apply, just as it is with corresponding affections arising from internal causes. Nevertheless, we conceive the matter to be, as well stated by Dr. Holland in his 'Medical Notes and Reflections,' that "there is no well-authenticated fact making it needful to believe that an influence is received from without, beyond those impressions on the senses, which are capable, according to the temperament and other circumstances, of exciting disordered as well as healthful actions throughout every part of the nervous system, and especially in the sensorial functions." In some instances, the effective antecedent may be a species of fatigue caused by monotony; in others, it may be some unwonted impression on the mind; in many, it may be that sort of mental contagion, sometimes called *imitative sympathy*, well-known to all practitioners who have seen hysteria epidemic in the wards of an hospital, and illustrated to its greatest extent in the history of the dancing mania. In conformity with this latter view, we have been struck with the fact that when and where, in mesmeric investigations, there has been no extended or popular acquaintance with the topic, it has been exceedingly difficult to get a *good subject*; but that, when mesmerism has been seen and heard of by almost every one, subjects in abundance are gained by every experimenter. Thus, in the account of Dr. Sigmond's case, adduced near the commencement of this article, the passages we have marked in italics, exhibit the interest that attached to the topic from previous conversation. We cannot, however, pursue this theme.

We shall not go into any lengthened discussion, respecting the application of mesmerism to the treatment of disease, because, in the first place, we have already attained our permitted limits; and, again, because our object has been rather to examine the validity of reported facts and prevalent theories, than to consider mesmeric doctrines in their practical application. This we hope to have an opportunity of doing hereafter. A very few words must suffice on the present occasion. We must be pardoned if, in the first place, we express our own conviction that, to the great bulk of the reported cases under this head, no importance whatever is to be attached. Every system of quackery that has infested practical medicine from the days of the Asclepiades down to our own times has been supported by abundant proof of this kind; and every individual empiric will boast his successes. We have no superior evidence in favour of the mesmeric cures.

Patients afflicted with certain forms of chronic disease, especially if associated with, or dependent upon defective tone of the nervous system, or depression of spirits, will, it is well known, often recover more rapidly under pleasing stimulation of the imagination and hope, than by treatment which occasions no grateful excitement. Mr. Greenhow, in his published account of Miss Martineau's case, regards the amelioration in the local affection as "the natural sequel of progressive improvement begun in, or antecedent to, the month of April," two months before the employment of mesmerism; this latter, however, he evidently considers to have been conducive, in some degree, towards relieving the concomitant symptoms of nervous distress, as, by a happy coincidence, it was employed just as "the time had arrived when a new and powerful stimulus only was required, to enable the enthusiastic mind of the patient to shake them off:" and thus we take the employment of mesmeric agency to be—purely subjective—in most of the reported examples of its curative power. Some sorts of epilepsy, hysteria, neuralgia, anomalous spasm, chronic dyspepsia, and the like diseases, seem to yield most readily, according to the published accounts, under its use. Sometimes, it may possibly influence certain forms of nervous disease by counter-stimulus, inducing a new and less hurtful condition, and one which may supersede that for which it has been employed: this we advance as a mere suggestion; but, even in this point of view, we suspect its application must ever be limited, from the difficulty of obtaining the artificial state in question, with the great majority of persons. For this latter reason, we fear that operative surgery will never receive extensive benefits from its practice, and that the experience of Madame Plantin, of Wombwell, and some others, will ever continue *extraordinary* cases.

We ourselves have failed to obtain any advantage from mesmerism in several instances where we have employed it, and where we had thought there was room for a fair trial. In our own cases, however, we were careful not to say anything to the patient explanatory of the proceeding, nor did we allude to it as a curative means; and this circumstance suggests a probable cause for the total absence of success.

Were we, however, as a profession, generally disposed to confide in the more rational accounts of mesmeric therapeutics; as we go on, the same shocks to common sense come upon us here, as elsewhere in this inquiry; and then we are thrown back, once more, upon incredulity. Thus we have Mr. Newnham stating, in his recent book, that "In the treatment of many persons together, the magnetisation of trees, or other inanimate substances, may be useful: and the facts are not inconsistent with the general laws of magnetism." We have, moreover, scientific and erudite men gravely proclaiming somnambulists to be the surest prescribers for diseases, and maintaining that practitioners should hold them in readiness, as guides and directors in the management of obscure cases: And the British metropolis contains at least one physician who indulges in these lamentable extravagances! Of Dr. Elliotson we would not speak but with unfeigned regard. He has our sincerest esteem for the services he has rendered to practical medicine; and, beyond his high qualifications as a physician and scholar, there is a boldness and directness of purpose in his proceedings which we love to see. He, himself, will not respect us the less, because we decline to follow him blindly, or any other individual, however estimable.

We have accomplished our task. We have striven to realize the intention expressed at the outset of this article, and have, to the best of our ability, given to mesmerism a fair, candid, and certainly unprejudiced consideration. In the prosecution of this design, we have been swayed by no fears that we might bring upon ourselves the wrathful stripes of the more ardent and enthusiastic of its votaries; nor, on the other hand, have we dreaded the ridicule of some of our brethren, in declaring a full belief in the reality of some of the facts, often set down as sheer delusion or imposture; nor been anxious to gain for ourselves that species of security often anticipated by those who cautiously take the *via media.* We have examined the subject purely as a matter of evidence, qualified by our own observations and reflections; and, in taking leave of the subject, we shall briefly recapitulate the conclusions at which we have arrived.

We conceive, then, that making abstraction of all the roguery and deceit so prevalent in mesmeric proceedings, there is a reality in some of the facts: that these consist of certain forms of nervous disorder often arising spontaneously under the vague designations of hysteria and somnambulism; that in these, when induced by mesmerism, there is no speciality except in the mode of their origin; and that they are brought about, not by any distinct agent as implied by the term *animal magnetism,* but by peculiar impressions made on the organs of sense and the inward consciousness. We conceive, moreover, that whilst we may fairly speak of mesmerism as a new *art,* evidence is wanting to show that it is a new *science,* involving any principle hitherto unknown. For the same reason, defective proof, we reject the reported phenomena, implying the receipt of intelligence through any other media than the customary organs of sense; although, in our judgment, it were better calmly to investigate these alleged marvels than rudely to deride them. This is a principle of action by which we have ever been guided. We hold ourselves in readiness to witness and candidly to examine any novel fact that may come in our way, as we believe our minds to be open to conviction on satisfactory evidence being adduced; and, whilst we have at all times pursued this method ourselves, it is the one we would, in conclusion, earnestly recommend to our readers.*

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* Since the above was in type, we have been much gratified by perusal of an article on mesmerism, in the last (February) number of Blackwood's Magazine. The author of the paper has evidently given to the subject much consideration, as well as some personal investigation. He examines the entire question, free alike from the shallow contempt of one party, and the preposterous credulity of the other. A truth in mesmerism is recognized, however commingled with error and absurdity; and the attempt at its discovery is judiciously made. The production very naturally commends itself to our approval, as some of the writer's views and conclusions coincide very much with those to which we have ourselves come; but, independently of this, there is a soundness in the whole tone and spirit which communicates to it an uncommon degree of excellence. Certain *physical* objections to the possibility of clairvoyance are put in a manner at once striking and novel. We strongly recommend the article to the attention of our readers.

## Art. IX.

*The Anatomy of the Arteries of the Human Body, and its applications to Pathology and Operative Surgery; with a series of Lithographic Drawings, the size of nature.* By Richard Quain, f.r.s. Professor of Anatomy in University College, and Surgeon to University College Hospital. The Drawings from Nature and on Stone, by Joseph Maclise, Esq. Surgeon, in Eighty-seven Plates, imperial folio. The Letterpress 8vo, pp. 550.—*London*, 1844.

On the first appearance of this work, we announced its nature and design in our Number for January 1841 (Vol. XI), and foretold, from the character of the author, that it would both contribute to the anatomical knowledge of the vascular system, and bring out the facts required by the surgeon. In no respect has our prediction been unfulfilled; much that is important being now added to our previous knowledge, and much doubt and uncertainty removed. Nor has the artist failed in the execution of his part of the work. It is too apt to happen that artists fall off in execution as the novelty of their undertaking wears off; but in the present case the reverse has obtained; as it appears, from comparing the later with the earlier plates, that the beauty and accuracy of the workmanship have been throughout progressive. The work, as now completed, consists of a volume of folio plates, of the size of life for the most part, and an octavo volume of letter-press. Its nature will be best explained by the author's own statement of the plan of his work.

> "The arteries are represented—1st, according to their most frequent arrangement, without the accompanying veins; 2dly, they are shown in connexion with the larger veins and the nerves; 3dly, the deviations from that which has been taken as the standard, because the most frequent, condition of the arteries are illustrated in a series of sketches; 4thly, such peculiarities of the veins, and occasionally of the nerves and muscles, as appeared likely to be of importance in surgical operations, are represented on a reduced scale.
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> "The letter-press, besides an explanation of the drawings and remarks on them, contains—1, a series of tables, showing, in a considerable number of cases, the condition of the arteries as to some of the points of most importance in their anatomy; 2, a connected view of their anatomical history—the details being arranged in systematic order; 3, practical commentaries; which consist, for the most part, of inferences from the facts previously set forth, and their application in performing surgical operations."

Although it would be supposed, on the slightest consideration, that a minute acquaintance with the blood-vessels and the deviations that are met with, both as to their course, branchings, and connexions, was of the greatest moment and necessary to every anatomist and surgeon, the subject has not hitherto received such attention as it merits. Until the time of the present publication it may be said that we knew with certainty but little of the variations in the ordinary disposition of the arteries, and their practical bearing. In this country the matter has been comparatively unstudied, and its consequence unrecognized. For in what treatise on surgery do we find enumerated with precision the unusual arrangement of the vessels and surrounding textures that may delay or complicate the operation of placing a ligature on an artery? It is true some attention has been given to it by Tiedemann, but the inquiry had not been followed out in its completeness, as in the present treatise on the anatomy and operative surgery of the arteries.

In an investigation apparently so endless as the variations of the blood-vessels, little value can be given to conclusions deduced from the examination of only a few bodies. As well might we endeavour to estimate the amount of rain in the year by the quantity falling in a given time in one shower, as attempt to fix the frequency of any particular arrangement of an artery by its presence in one or two bodies. The observations to be useful require to be continued during many years, and on a number of bodies sufficient to supply the average frequency. There are, therefore, but few surgeons who, with the opportunity, have the talent and application so necessary to come to a correct determination. Fortunately Mr. Quain possessed these requisites; and, from his position as Professor in the School of University College, he has had the opportunity of examining, more or less minutely, the anatomical disposition of the vessels in 1040 bodies. From such great experience it is but just to assert that our author is entitled to fix what is the standard conformation of the vessels, and to form "at the same time reasonable conclusions both as to the limits of the deviations from that standard, and the relative frequency of their occurrence."

For ourselves, we could find sufficient matter for praise in the fact of Professor Quain giving us an original work, though we think there may not be many who will participate altogether in our feelings; for in these days of utilitarianism any inquiry is undervalued unless the author is prepared to enunciate some practical application. This is especially the case in the study of the human body; the question of *cui bono* meeting the student of Nature at every step. But passing over the subject of the love of science for its own sake, we may inform our readers that the end aimed at by our author has been, altogether, the application to surgery of the information obtained. The inducement to inquiry arose from "the belief that the difficulties which have often occurred in the performance of those surgical operations in which the larger arteries are concerned, have arisen in great part from want of sufficient acquaintance with the differences in anatomical disposition to which these vessels are subject—not merely the deviations in the origin of large branches, which are usually named varieties, but other peculiarities of various kinds which are liable to occur, such as those which affect the length, position, or direction of the vessels."

In a book like the one before us, whose data are facts obtained by observation, there is little room for criticism; we can but record the information contained in it. We shall therefore select such parts as will illustrate the character of the work, and serve to impart some surgical knowledge. In the notice of any vessel, we shall state first what pertains to the unusual condition, and then consider the application of this to practice.

Arch of the aorta. The great systemic vessel of the body, from which the other arteries may be considered but offsets, is first considered by our author; and we cannot commence more judiciously than by following the same order. The commencement of the great trunk of the aorta presents a not uninteresting study to the physician seeking to detect disease, or to the physiologist who endeavours to explain deviations from the usual arrangement by reference to the persistent forms of the same part in animals lower in the scale than man. Professor Quain has not been unmindful of the aid comparative anatomy offers in the explanation of irregular appearances in the human body, and he accordingly attempts to illustrate some of the varieties in the disposition of the beginning of the aorta by examples obtained from the lower classes. We are accustomed to consider, because of its much greater frequency, the curvature of the aorta from the base of the heart to the left side of the vertebral column as the constant anatomical form, though the arching of the vessel to the opposite or the right side of the spine, so as to bend over the roof of the right lung, is occasionally seen. If we attempt to seek an explanation of this that appears at first sight strange, we discover that in the bird the aorta turns to the right, but in man to the left side; and that the different state is due to the persistence of one or another of the primitive branchial arches of the fetus. In an early period of the existence of the fetus of a vertebrated animal, the intestinal canal is surrounded near its front by five pair of vessels, which unite above the œsophagus in the trunk of the aorta; and from the obliteration or persistence of some of these result the different forms in the commencement of the aorta, and the pulmonary artery of the adult. These arches are more or less permanent in the vertebrated classes. Thus, in the cartilaginous fishes, the five pair of arches remain. In batrachia with tails only four are seen, the fifth or last being transformed into the pulmonary artery; in those without tails, as in the frog, only one branchial vessel is left on each side, constituting a bifurcated aorta, and the posterior arch is changed into the pulmonary artery. In birds the fourth arch on the right side remains as the aorta, whilst the last on the same side and the fourth on the left produce the pulmonary arteries. In mammals the aorta is developed from the fourth arch of the left side, and the pulmonary artery is derived from the last on the left and the fourth on the right side.

The few unusual changes of the trunk of the aorta, here described and represented, have been chiefly collected from the experience of predecessors; for our author says:

> "The deviations from the ordinary disposition of the arch of the aorta referred to in the preceding pages, and represented in the majority of the figures in the fifth plate, are of very rare occurrence, insomuch that in the number of bodies (nearly a thousand) over which my observation has extended with a special view to the subject, no important changes were found in the arch, with the exception of those which occur in its position or height within the chest, and the single case of transposed aorta accompanying transposition of the viscera." (p. 42.)

The variations in the bend of the aorta refer either to change in position, or to unusual conformation.

*Change in the position.* The highest part of the bend of the arch, commonly placed rather less than an inch from the upper margin of the sternum, may vary from that spot opposite the interval between the first two dorsal vertebræ, to the middle of the fourth dorsal vertebra. The arch is ordinarily directed over the root of the left lung, though it may be bent in the opposite direction, to the right of the vertebral column as in birds. This deviation may be accompanied by transposition of the viscera and the other large vessels of the body, or, without any transposition, the aorta may take its accustomed position on the spine below the root of the right lung. From the rarity of the occurrence of the unusual position, surgeons may perhaps disregard it, though it is well to be informed of its occasional existence, inasmuch as the innominate trunk is then transferred from the right to the left side of the neck, and consequently the subclavian artery of the right side would be more difficult to find from its deeper position, and sharper curve over the first rib. But the relative height to which the arch reaches is of more consequence. If it is placed on a level with the fourth dorsal vertebra, the whole of the innominate artery, and the first part of the subclavian artery are contained in the thorax; so as to render almost impossible the ligature of either, and obscure the detection of an aneurism. On the other hand, if the arch extends nearly to the root of the neck, those same vessels will be accessible, and could be reached with comparative ease.

*Unusual conformation.* The instances reported of this state are both curious, and explicable by the permanent conditions in the lower classes. For the arch may be bifurcated as in reptiles, the œsophagus and trachea being contained in the inclosed space. Or the aorta may divide without an arch into an ascending and descending trunk as in quadrupeds.

> "Hence the origin of the terms 'ascending' and 'descending' aorta. These words were introduced into anatomical language at a time when the systemic artery was supposed to divide, as shown in fig. 6, into two parts, which took opposite directions, and were properly named ascending and descending. The idea of the form of the aorta was then taken, as is generally known from its state in quadrupeds; but the terms were retained even when the error as to the fact had been removed." (p. 21.)

*Branches from the arch.* The branches of the aorta that ascend to the neck, and are concerned in operations, are the innominate,* left carotid, and left subclavian trunks, which spring from the top of the arch. The changes to which these are subject, it is not our intention to enter into in detail, though sufficient interest might be given to the subject by the statement of the illustrious Haller—that only the left vertebral artery had been seen by him to arise from the arch, even though he had dissected 400 bodies. Firstly, the origin of the three arteries may be moved nearer than common to the beginning of the aorta, or one may approach or join another. Secondly, the number may be diminished to two, the left carotid and innominate uniting, a variety found by Prof. Quain's observations to be the most frequent, though it is the general opinion of anatomists, that an increase in the number of the branches is most commonly present. Tiedemann gives in his work† a figure of this arrangement, and refers to Zagorsky who described it; but it appears that the accuracy of the drawing is very doubtful, for our author says with reference to the same;

> "Now, on reference to the essay of the Russian anatomist, I find that he has not illustrated the description bya drawing; the representation given by Tiedemann is, in consequence, to be regarded as a plan made in conformity with the description in the original paper." (p. 46.)

Thirdly, the number three may remain the same, but the vessels be differently united. And fourthly, the number of the primary branches may be increased by the division into two of the trunk of the innominate, the four arising in a very varying order from right to left. Those who wish to pursue farther this subject, should consult the work, p. 47. It is, however, worthy of remark that when there are four trunks, the right subclavian is gradually transposed from the right to the left side, and arises in the greater number of instances altogether to the left of the others, so as to deviate apparently as much as possible from its usual origin. In those cases in which the arch is to the right side of the spine as in birds, the innominate trunk is destined to the left half of the neck, and separates into the left carotid and left subclavian; and when the arch is bifurcated, as in the instance described by Malacarne, the subclavian and the external and internal carotid of the same side of the body arose separately from the same arch.

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* We must thank our author for substituting English for Latin terms in numerous cases.

† Tabulæ arteriarum corporis humani, 1832.

SUBCLAVIAN ARTERIES. Both in an anatomical and a surgical view, there will be found matter that is new and exact in the portion of the work occupied with the consideration of the subclavian artery. In a vessel of such large size, hitherto so unsuccessfully ligatured, the attempt being attended with great loss of life, all facts in its anatomical history have a most momentous importance to the surgeon; for improvement in operative surgery depends upon the progress and knowledge of anatomy. Much of the want of success attending ligature of the commencement of the subclavian, is probably to be attributed to a lack of precision in the anatomy. Until the present inquiry much of our knowledge has been obtained from the examination of only few bodies, or, what is worse, from only general impressions instead of numerical precision. In illustration of the manner in which general statements are made, our author cites the instance of Dupuytren, who says that the subclavian is comparatively superficial in those persons with long and slender necks, but deep in those with short thick necks and muscular shoulders. Although Professor Quain is disposed to agree with Dupuytren, as to the influence of the shoulders, he gives, very justly, but little credence to the accuracy of the assertion, being conscious how often a general impression, when tested by observation, is found to be contrary to fact. He very properly observes:

> "It should, however, be understood that my opinion as to the correctness of this statement is founded on the observation, with special reference to this point, of only a few cases, and on the general impression existing on my mind, and that it is not an inference from such a number of carefully examined bodies as would warrant entire reliance on its accuracy. There is no evidence that Dupuytren's statement has any better foundation." (p. 151.)

The part of this valuable work in which this important artery is described will give a fair idea of the information obtained by the researches of the author.

*Right subclavian.* Most commonly this artery is a branch of the bifurcation of the innominate trunk, and begins near the sternal end of the clavicle, the origin being above or below that spot according as the common trunk may reach into the neck or divide in the chest. Usually the two arteries (subclavian and carotid,) into which the innominate divides, are placed side by side, being equally far from the surface; but at other times the carotid is altogether in front of the subclavian. From its point of origin the subclavian courses outwards across the lower part of the neck, to the upper limb, forming an arch between the scaleni muscles, and giving branches upwards and downwards. The position of that arch when noted in twenty-five bodies was as follows: it was slightly (not half an inch) higher than the clavicle in eleven, and not higher than that bone in six instances; in the remaining eight it was higher in the neck, reaching in four cases from one inch to one inch and a half above the clavicle, so as to be for a longer extent in contact with the bag of the pleura. Our notice of the ordinary course of the vessel between the scaleni, is only for the purpose of drawing attention to the fact that it may deviate from that line. In a few instances the artery perforated the fibres of the anterior scalenus muscle, both with and without an accompanying trunk of the brachial plexus, and occasionally it has been found altogether in front of that muscle, in close contact with the subclavian vein. For the purpose of referring to the separate portions of the vessel, which vary in depth and consequently in the facility with which they may be reached, we may state that anatomists divide the artery into three parts, one internal to the scalenus, one beneath it, and one beyond that muscle. In the first part it is very deep, and has most complicated connexions; beneath the scalenus it is in contact with fewer nerves and veins, and is less deep; but in the third part it is most superficial, not being concealed by any muscle, though occasionally this portion may be covered by the trapezius extending along the clavicle so as to join the sternomastoid muscle, or by the omohyoid, (the posterior belly,) which may be so wide as entirely to reach over the vessel.

*Branches.* In estimating the circumstances that influence the success of the ligature of a large artery, such as the subclavian, it is impossible to disregard the number and position of the branches that are connected with it, seeing that they are the disturbers of the healing process set up by nature. " And,—considering the shortness of the trunk, the size of the offsets, and the manner of their arrangement on the parent vessel,—it may be confidently stated that there is no artery in which the influence alluded to is more considerable than in the subclavian." To ascertain the number and position of the branches on the trunk of the vessel in the three different parts of its course, in order to conclude what portion offered any chance of success in an operation, was made the subject of particular inquiry.

In the first part of the subclavian there are three branches, the vertebral, thyroid axis, and internal mammary, which are most frequently placed near the scalenus muscle, leaving thus an interval at the beginning unoccupied by branches. Observations were therefore made on sixty-five bodies, to determine how long was the interval available for ligature, between the origin from the innominate trunk and the branches, and with the following result :

" Length of the right subclavian artery from its origin to the point at which branches arise :

| | |
|---|---|
| ½ inch and under . . . | . 8 |
| more than ½ inch, and not exceeding 1 inch . | . 33 |
| more than 1 inch, and not exceeding 1½ inch | . 23 |
| 1¾ inch (the extreme length) . . | . 1" (p. 165.) |

In figure 5, plate 21, five branches are represented as connected to the part of the artery internal to the scalenus, covering the trunk, and not leaving any space for a ligature without encroaching on a branch.

A difference was observed in the second part of the subclavian on the opposite sides of the body; the absence of branches being most frequent on the left, and the presence of one most constant on the right side. By the abstract of the table it seems that in two thirds of the bodies examined, one branch, the superior intercostal, was present, and that in more than half the remainder there was not found any. Occasionally two, three, or more branches took origin from this part.

In the third part, where the artery is most frequently tied, and which is said in anatomical works to give but rarely a branch, our author finds sometimes one, two, three, and four branches. The abstract of the same table shows that only in about half the bodies observed there was not any offset—the proportion being 1 in $1\frac{6}{7}$; "and that in less than half—one example occurring in $2\frac{1}{6}$, it (the artery) gave origin to a single branch."

Having mentioned the facts that interest the surgeon, we may be excused if we consider shortly the details of some of the branches that concern the anatomist. Hitherto much confusion has existed in our works of anatomy respecting both the origin of the branches of the subclavian, and the names to be applied to them. The differences amongst authors have arisen in a great measure from the absence of data sufficiently numerous to decide which is the most frequent arrangement. Happily now we may consider the doubt resolved by the labours of Professor Quain, whose statement as to the most constant distribution must be considered an authority. And in future it must be inexcusable in any writer to disregard the information contained in the 'Anatomy of the Arteries, &c.' We should wish, did our space permit, to extract freely the facts of our author; nevertheless, we shall endeavour to collect such data as will display the extent of his researches, and oblige others to examine the work. We do not here intend the description of the arteries, only the points in which they differ from the common statement. In all treatises on anatomy it is said that five branches arise from the subclavian, viz. vertebral, thyroid axis, internal mammary, superior intercostal, and deep cervical. Our author fixes them differently, as vertebral, thyroid axis, internal mammary, superior intercostal, and frequently posterior scapular; this last arising beyond the scalenus in a ratio rather less than half of the number of bodies examined.

Firstly. The vertebral artery (*arteria vertebralis*) was not once seen to arise beneath or beyond the scalenus. It may be said to enter almost always the aperture in the transverse process of the sixth cervical vertebra, and very rarely that of the seventh. No example has been seen in which it entered higher than the third, though it is described as reaching as high as the second or first. Some curious instances of the origin of this branch by two or three roots have been met with, and an attempt is made to explain their source.

Secondly. The thyroid axis (*axis thyroideus*) springs from the first part of the subclavian, and divides into three branches, viz. inferior thyroid, transverse cervical, and supra-scapular.

The inferior thyroid (*art. thyroidea inferior*) gives as a branch the ascending cervical, which is sometimes described as a distinct artery from the thyroid axis.

The supra-scapular artery (*art. supra-scapularis*), lying across the bottom of the neck along the line of the clavicle, has the course and distribution commonly described.*

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* This branch has been named *art. transversalis humeri;* but this term only adds to the confusion.

The transverse cervical artery (*art. transversalis colli*), a considerable trunk, crosses the side of the neck above the line of the supra-scapular, and divides beneath the trapezius into superficial cervical (*art. cervicalis superficialis*) for the muscles, and posterior scapular (*art. scapularis posterior*), directed along the base of the scapula. The above is the most frequent disposition of the transverse cervical, and may be said to be its usual distribution. But suppose, for the sake of explanation, that the artery should not be sufficiently large to separate into the two branches named, it ends entirely in the muscles on the side of the neck; and the posterior scapular artery will, in that case, spring as a separate branch from the trunk of the subclavian beyond the scalenus muscle. When noticing the origin of branches from the subclavian, mention was made of one being connected very frequently to the third part of the vessel; the branch then referred to is the posterior scapular, which is usually derived from the transverse cervical artery. It may seem needless, because the fact is so obvious, to direct attention to the influence that the so constant presence of a branch from the third part of the subclavian must have upon a ligature of the trunk; but it is our duty to remark that, before the present publication appeared, we did not possess any accurate knowledge concerning the frequency with which this arrangement might be expected. Our author has found three distinct modes of distribution of the transverse cervical artery, which are here enumerated in their order of frequency.

"(1) A considerable artery (transverse cervical—arteria transversalis colli) arises from the thyroid axis with the supra-scapular, and crosses the side of the neck at some distance above the clavicle and the last-named artery, as far as the levator anguli scapulæ, close to which muscle it divides into two principal branches. *a.* One of these (the superficial cervical—arteria cervicalis superficialis) runs superficially to the muscle just named, and ramifies under the trapezius, distributing branches to it and the muscles beneath it. *b.* The other branch (posterior scapular—arteria scapularis posterior) lies much more deeply than the preceding; it sinks under the levator anguli scapulæ, and turns downwards along the base of the scapula, beneath the rhomboid muscles. This disposition of the arteries existed in the body of which the second plate is a representation.

"(2) There are two separate arteries of nearly equal size. *a.* One arises, as in the preceding case, from the thyroid, and has the same course across the neck. It ends in branches under the trapezius muscle. From the similarity of the distribution of this artery to the superficial branch of the transverse cervical noticed in the foregoing paragraph, this is entitled to the same name (superficial cervical). *b.* The second artery usually arises from the third part of the subclavian, and, like the deep branch in the former case, is directed along the posterior margin of the scapula under the same muscles. This must obviously be named the posterior scapular artery. This mode of arrangement of the vessels is illustrated in the first and sixteenth plates.

"(3) In this, as in the second case, there are two arteries; but one is much smaller, and the other larger, than those which belong to that arrangement. *a.* The first artery is very slender. Arising from the thyroid, it has the usual course of the transverse cervical, and is expended in small ramifications at the side of the neck, between the sterno-cleido-mastoid and the trapezius muscles. This might be considered to correspond to a part of the superficial cervical. *b.* An artery of considerable size, given from the third part of the subclavian, divides opposite the levator anguli scapulæ into two divisions. One of these supplies the trapezius with the muscles which it covers, and may be regarded as corresponding to the greater part of the superficial cervical of the other cases. The other division of the artery has the usual course of the posterior scapular. The disposition of the arteries here pointed out was present in the body from which the third and the nineteenth plates were drawn—the size, the division, and the arrangement of the vessels are illustrated in the latter plate." (pp. 175-6.)

Thirdly. The superior intercostal (*art. intercostalis superior*) and deep cervical (*art. profunda cervicis*) have been ascertained by a great number of observations (266 out of 285 instances) to arise by a common trunk beneath the anterior scalenus muscle. In our text-books of anatomy the two are described as distinct branches with separate origins. From the almost constant occurrence of this common origin, it seems difficult to account for their being disunited; and it is a good example of the manner in which one writer follows another in continuing an error. In consequence of the constancy with which the two are joined, our author considers the artery named deep cervical as only a posterior or muscular branch of the superior intercostal, analogous to the posterior offset from every other of the intercostal arteries of the aorta. Consequently it may be omitted from the primary branches of the subclavian. In its course backwards this branch (deep cervical) is placed between the transverse processes of the last cervical and first dorsal vertebræ.

Fourthly. In addition to the branches usually described, a small artery (? spinal) arises from the subclavian beneath the scalenus, and is distributed to the nerves of the brachial plexus, and the interior of the spinal canal.

*Right subclavian from the arch of the aorta.* Besides the common place of origin opposite the sterno-clavicular articulation, the right subclavian takes origin, in those cases in which there is not any innominate trunk, directly from the arch, either preceding the other branches from this part, alternating with one or other, or following them. Of all the variations, that in which it is the last branch is the most frequent, and has been seen four times by our author. With this last origin the vessel crosses obliquely the spinal column, beneath the trachea and œsophagus, and takes its accustomed place between the scaleni muscles. It must be obvious, therefore, that should it be necessary to ligature the vessel, its position would be deeper and lower in the neck than when it comes from the innominate artery. When the artery has the position behind the œsophagus, it may be injured by force acting on the œsophagus, or by a foreign pointed body impacted in the gullet. No difficulty of swallowing during life has been traced to the existence of the subclavian in that position, in the instances in which after death this variety has been found. If, however, the aberrant artery lies between the trachea and œsophagus, as in a case published by Dr. Bayford,* there is difficulty of swallowing; and in the case referred to, this increased in violence at puberty, augmented in intensity periodically or during exercise, and lasted till death at sixty-two years.

It is a remarkable circumstance connected with this variety that, in the examples of the origin of the right subclavian from the left side of the arch, the recurrent nerve of the right side arose from the pneumogastric opposite the lower part of the larynx. Dr. Hart has attempted to explain this departure from the regular order by reference to the near position of the larynx and arch of the aorta in the fetus.† He says:

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* Memoirs of the Medical Society of London, vol. ii, 1793.

† Edinb. Med. and Surg. Journal, vol. xxv, p. 287.

"In the earlier periods of the existence of the fetus, the rudiment of the head appears as a small projection from the upper and anterior part of the trunk, the neck not being yet developed. The larynx at this time is placed behind the ascending portion of the arch of the aorta; while the brain, as it then exists, is situated so low as to rest on the thymus gland and front of that vessel. Hence it is that the inferior laryngeal nerves pass back to the larynx, separated by the ascending aorta, the left going through its arch, while the right goes below the *arteria innominata.* As gestation advances the head becomes more distinct, and the neck begins to be formed after the second month, which, as it lengthens, has the effect of removing the brain upwards to a greater distance, and of drawing out the larynx from the chest, in accommodation to which the nerves of the *par vagum* and their recurrents become elongated, and hence the circuitous route the latter are found to take afterwards, forming loops in which the aorta and right subclavian artery are, as it were, suspended."

*Left subclavian from the arch.* This is the regular arrangement in bodies without variety in the arch. But in those bodies in which the arch bends to the right side of the spine, the left subclavian would be produced commonly by the bifurcation of the innominate which is then directed to the left half of the neck. If the innominate is wanting in that peculiar disposition of the aorta, the subclavian may commence last on the arch, and will therefore cross the spinal column, from right to left, behind the trachea and œsophagus. Should there be transposition of the viscera and pulmonary artery, as well as of the arch, in those instances in which the subclavian arises last, this vessel has no further peculiarity. But should there not be the transposition of the pulmonary artery with that of the arch, the pulmonary artery still remaining on the left of the aorta, it is evident that the canalis arteriosus that joins those two parts in the fetus, must take a circuitous course behind the œsophagus and trachea to reach its destined point; in such a case the left subclavian, not arising from the innominate, is found connected with a pouch or dilatation. The presence of this pouch has been remarked by the narrators of different cases, but no attempt had been made to explain its nature. Professor Quain has carefully examined the examples of the origin of the left subclavian from a pouch in both the fetus and the adult, and tracing the dilatation through successive stages has concluded with great sagacity, that the "pouch" is but a portion of the canalis arteriosus, or tube uniting the pulmonary artery with the aorta in the fetus, that remains unobliterated through life in consequence of the left subclavian artery arising from it. So the ductus arteriosus will be ligamentous only in part, the upper end remaining pervious to blood for a short distance, and constituting a portion of the trunk of the subclavian, in the same way as the branches of the umbilical vein to the left lobe of the liver in the fetus, remain open and become part of the left division of the vena portæ of the adult. As we could not condense, without destroying its character, the description of the steps by which the author has come to that determination, we are compelled to extract it entire notwithstanding its length.

"In order to explain the conclusion I have arrived at, as to the nature of the pouch, for such it may be named for the sake of convenience, it will be necessary to give a statement of the facts that have led to the conclusion. These may be arranged into two sets: according to the position which the pulmonary artery and the ligamentum arteriosum or canalis arteriosus bear with reference to the arch of the aorta.

"*a.* The vessels having their usual course and position: a small nipple-shaped dilatation is not unfrequently observable on the concave side of the arch towards the left side, projecting at the point at which the ligamentum arteriosum is united to the aorta. The connexion of this dilatation with the ligament just named, suggests that it is an unobliterated part of the canalis arteriosus. But the dilatation from which the subclavian artery has been found to arise, is of considerably larger size than those now noticed, (see plate 7, fig. 2, b.) In accounting for this fact it will be assumed for the present that the subclavian artery may arise from the canalis arteriosus near its end. Now, supposing this to be the case, it is manifest that, blood being transmitted from the aorta into the subclavian artery through the end of the canalis arteriosus, the obliteration of the upper part of this tube must, as a necessary consequence, be prevented. The greater size of the pouch is, then, according to the view here taken of the subject, owing to the origin of the large artery from it. It may here be added, that should the aorta be directed to the right side, the change of its course being accompanied by the general transposition of the viscera, the pulmonary artery undergoes a corresponding alteration of its position; it is placed on the right side, and the ligamentum arteriosum joins the concavity of the arch in the usual way, (plate 5, fig. 4.) And, moreover, when the aorta has the unusual direction, at the same time that the viscera retain their ordinary position, the course of the pulmonary artery and the ligamentum arteriosum may be, but, as will presently appear, is not always the same as that just indicated. This fact is illustrated in the body of a fetus described by Mr. Abernethy, and noticed in a former part of this work, page 18, and plate 5, fig. 5. From the circumstances before stated it is apparent that, as the canalis arteriosus joins the arch of the aorta in the ordinary way in these various cases, a dilatation, if any existed, would probably be the same as those already described.

"*b.* A very different disposition from the preceding exists in the two preparations represented in plate 7, fig. 1, and plate 20, figs. 8 and 9: for while the aorta arches to the right side, the pulmonary artery retains its usual position on the left, and the ligamentum arteriosum joins a pouch projecting from the aorta. Now, an inspection of the figure (8) will show that the canalis arteriosus, in order to join the aorta at the end of its arch, must, in such a case as this, necessarily pursue a circuitous course, and cross the trachea and œsophagus. If it had the transverse course behind these tubes, if also the subclavian artery arose from it, the appearance of the vessels would be easily explained, for the pouch would be in these, as in the former instances, the end of the arterial canal, unobliterated, because of the transmission of blood through it from the aorta.

"In order to complete the view here presented of the nature of the dilatations or pouches under discussion, it is necessary to show the left subclavian artery arising from the canalis arteriosus in the fetal state before any part of this canal has been changed into a ligament. Cases in which the subclavian artery and the 'arterial canal' had this disposition, are recorded by Klinkosch and Meckel, and two figures contained in the essay of the former are copied in plate 20, figs. 10 and 11. In one of the figures the heart and large vessels are viewed from before; in the other, the parts are seen on their posterior aspect. The aorta and pulmonary artery have, as they arise from the base of the heart, their ordinary relative position, (see fig. 10;) the former is directed to the right, and the latter to the left side of the trachea and œsophagus. On an inspection of the 11th figure, the vessels being viewed from behind, the canalis arteriosus (14) is seen to have a transverse course behind the œsophagus and the trachea (*d*) and (*h*), and to join the aorta; and the left subclavian artery (5′) is derived from it at some distance from the aorta. In conclusion: supposing the case last mentioned to undergo the usual changes which occur after birth, a doubt cannot be entertained that it would be brought into the exact condition of those referred to immediately before; for the canalis arteriosus would be partly reduced to the state of a cord or ligament, but this alteration would not extend beyond the point at which the subclavian artery takes its origin; and the remainder, transmitting blood from the aorta into the artery just named, and being larger than the vessel given from it, would constitute a pouch." (p. 158.)

*Ligature of the subclavian.* After our extended notice of the facts collected by our author on the anatomy and varieties of the subclavian arteries, let us bring the additional knowledge to bear on the operation of ligature of those vessels. Since the period of the first application of a ligature to an artery to obliterate an aneurismal tumour by diminishing the flow of blood through it, the subclavian, both from its size, its branches, and the number of important parts in connexion with it, has obtained much attention from surgeons. Anything that may bring certainty into our practice ought to be most eagerly received; and surgeons should carefully examine this work, in which are distinctly enumerated the different circumstances that may render ligature of the subclavian more difficult, or diminish the chances of a successful operation.

The subclavian may be tied beyond the scalenus muscle for aneurism of the axillary, or upper part of the brachial artery. As before stated, the vessel is found most deeply placed in the first part of its course and most superficially in the third, consequently, whilst the ligature of the former is extremely difficult, that of the latter is comparatively easy. The operation is made close above the clavicle, or between this bone and the omo-hyoid muscle, the incision being limited in front by the sterno-mastoid muscle. The proceeding is not generally difficult unless the parts have been altered or displaced by disease, or its progress is impeded by any of the following uncommon dispositions of the vessels and muscles. In the first incision the external jugular may be wounded in consequence of either its enlarged size or unusual position, and to avoid it the integuments are divided on the clavicle; but it should be remembered that the external jugular may cross over the clavicle to reach the subclavian vein, or the cephalic vein, or a branch from this may ascend over the same bone to join the external jugular. The depth from the surface is increased in persons with short thick necks, high clavicles and prominent shoulders, but more particularly by the carrying up of the limb as an effect of a large aneurism in the axillary space. The surgeon may be delayed in the operation by finding the sterno-mastoid and trapezius muscles united along the clavicle, thus covering entirely the interval in which the artery lies, or by the omo-hyoid (the posterior belly) extending completely over the artery, instead of forming only the outer boundary of the space. The line of direction of the trunk of the artery may be much changed. Commonly it is a little above the clavicle, when the tubercle on the first rib, at the insertion of the anterior scalenus, will serve as the guide to the vessel. As the vessel is almost altogether on the rib, there is not much danger, with moderate care, of wounding the pleura. It may, however, be more superficial, passing through the fibres of the anterior scalenus, or even in front of it. Occasionally the artery arches much higher into the neck, being one inch and a half above the clavicle, and higher than this bone can be raised by the elevation of the shoulder. In this last condition the first rib cannot be any index to the place of the artery, which will be found by tracing upwards the posterior edge of the scalenus muscle, and by taking advantage of the large nerves directed downwards to the subclavian from beneath the muscle. Of the greatest consequence too, in the high arch of the vessel, is the state of the pleura, for all the third part of the artery is in close contact with the bag of the pleura that rises very high into the neck, and may very readily be punctured. Supposing the artery found, the securing it may be delayed by the subclavian vein, that may be placed on a level with the artery, or even conceal it, and is therefore in danger of being transfixed and included in a ligature, as was done by M. Robert. In nearly half the bodies observed, one branch of artery was connected to the third part of the subclavian, arising near the scalenus muscle; but as the result of ligature of the vessel has been so successful this does not appear to interrupt the progress of cure, or it may possibly have been absent, or sufficiently far from the ligature not to interfere with its action. Such then are the principal circumstances that may interfere with the operation of ligature of the subclavian beyond the scalenus, but with some caution and a due degree of dexterity they may be mastered.

It has been thought necessary to tie the first part of the subclavian for aneurism affecting the vessel beyond the scalenus. Besides the depth of this part of the trunk of the vessel and the difficulty in reaching it, circumstances common to it with other vessels, the branches have here the greatest influence in preventing the formation of a clot; for as before mentioned this part of the artery is thickly studded with offsets, so that only about one inch of the trunk, in the most favorable cases, intervenes between them and the origin from the innominate, and oftentimes there is not any interval sufficient for tying the vessel with a prospect of success. The contemplation alone of the number and position of the branches, and the nearness of the large carotid trunk to a ligature placed on the subclavian internal to the scalenus, might lead an anatomist to infer that hemorrhage would ensue on the ulceration of the coats of the vessel; and the practice of surgeons fully corroborates the truth of the inference, for death has followed the application of the ligature. To cut off the disturbing influence of the rush of blood in the carotid, Professor Quain proposed to tie both the carotid and subclavian trunks near their commencement. The operation has been tried by Mr. Liston, but without success. The same distinguished surgeon wished to repeat this new operation in another case of aneurism of the third part of the subclavian, but in the progress of the operation the trunk of the subclavian was found so much deeper than common, that it was supposed the vessel arose as a separate trunk from the arch, and therefore only the subclavian was included in the ligature. On examining the body after death, the subclavian was found to come from the innominate, but it took rise altogether behind the carotid, and was separated from this by a layer of fascia. In any repetition therefore of this operation, before it is concluded that, because the subclavian is deeper than usual, it must come as a distinct trunk from the arch of the aorta, the operator should compress the innominate trunk, or at least the origin of the carotid, to see if the flow of blood is thereby diminished. If then the result of the attempt to ligature the subclavian internal to the scalenus seems opposed to farther trial, still less justifiable would it be to endeavour to tie the corresponding part of the left subclavian, concerning which the opinion of our author is strongly expressed in the following passage:

"The left subclavian being nearly vertical in direction from the arch of the aorta to the scalenus muscle, only a small part can be said to be placed to the inner side of the scalenus after its emergence from the thorax; and the entire of the artery from the aorta to the muscle is so deeply placed, and, at the same time, covered by such important parts, which do not admit of being moved aside—namely, the pleura and the lung with the internal jugular and innominate veins—that no operation has been hitherto undertaken on this division of the vessel; and indeed an effort to expose it in a surgical operation does not seem admissible." (p. 165.)

Our full notice of the subclavian arteries will be sufficient to illustrate the practical nature of the knowledge presented to us, and will excuse further remark on the vessels of the head or trunk. Were we to notice all that is new, we should be compelled to give an analysis of most of the work. In this difficulty we shall select the trunk of the chief artery of both the upper and the lower limb—vessels that often require surgical interference in consequence of disease or injury at a distant point.

Brachial artery. The examination of the vessels of the limbs shows, as might be anticipated, that the farther the leading artery recedes from the trunk of the body the more the constancy of arrangement is departed from. Even in the large brachial artery of the upper arm an early division is a very frequent occurrence. Commonly the vessel bifurcates into radial and ulnar branches rather below the elbow-joint, but it may divide into two in the axillary space or at any point intermediate between this and the usual place of termination. The frequency of the early division was specially examined in a certain number of bodies and with the following result. In 481 bodies the vessel was found divided in 94 instances, thus giving two large trunks in the upper arm in about 1 in every 5 bodies. It has long been doubtful whether there exists a correspondence between the opposite limbs of the same body, that is to say, whether a usual or an unusual disposition of the vessels of one limb is accompanied by a similar one in the same part of the opposite side of the body. Bichat asserted that there is not any correspondence, but Meckel states that the same distribution, whether regular or irregular, occurs in both limbs, in accordance with an opinion that "the lateral symmetry, the most powerful of all, is maintained even in malformations." Tiedemann observes that the high division of the humeral is frequently found in both arms, and further adds a statement, which we do not think will be found exact—viz., that chiefly men of small stature have this variety.* The question cannot be decided by either of those writers, because neither has examined a sufficient number of bodies. Professor Quain has given his attention to the same subject, and has observed sufficiently extensively we think to have some weight in determining what degree of correspondence exists between both arms. The conclusion he comes to is, "that most commonly there is not a correspondence between both arms with respect to the high division of their arteries." He extracts from his observations the number of instances of the high division of the artery of the upper arm, examined in both limbs of the same body. The number so noted was 61, of which the following is the particular distribution:

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*"Haüfig kommt die hohe Theilung der Armarterie an beiden Armen vor, wie Heister Petsche, Monro, Meckel, und andere richtig bemerkt haben. Ich sah diese Anordnung öfters. Besonders sind Menschen von kleiner statur dieser Abweichung entworfen."

| | | |
|---|---|---|
| "The entire number of cases is | | 61 |
| The high division existed on both sides in the same position, in | 5 | |
| It occurred on both sides but in different positions, in | 13 | |
| | —18 | |
| It occurred on but one side, the artery on the opposite side dividing at the usual situation, in | 43 | |
| | —61" (p. 267.) | |

When the trunk of the brachial takes its accustomed course in the upper arm, it is along the inner border of the biceps muscle with the median nerve. But every anatomist and surgeon must be aware that the vessel is often removed from its regular position, and that in consequence any one ignorant of the fact might fail in an attempt to find it. The course of the artery, when not at the edge of the biceps, is along the internal intermuscular septum to the inner condyle of the humerus, where it is covered by the fleshy fibres of the pronator teres muscle, which is always in that case wider than common. The median nerve follows the deviating vessel. Sometimes the errant trunk of the artery winds round a projecting portion of bone on the lower third of the humerus, or it may be covered by a ligamentous band from the same portion of bone, which bounds an aperture resembling the foramen through which the humeral artery turns in the lion. The brachial, as before remarked, may be divided into two as high as the axilla, thus giving two large trunks in the position of the one; and the extent for which two vessels are found will depend upon the place of bifurcation. Either of the three arteries of the fore arm,—viz., radial, ulnar, and interosseous, may have a high origin, but the radial most frequently, then the ulnar, and lastly the interosseous. Notwithstanding the apparent irregularity with respect to the division of the brachial, our author never found more than two arteries in the upper arm below the bifurcation, except in one case in which all the three arteries of the forearm sprang together a little above the condyles of the humerus. When two arteries occupy the upper arm they are generally close together at the border of the biceps, the radial branch being most superficial; but of great importance is it to the surgeon to know that the larger trunk—the continuation of the brachial as it divides into ulnar and interosseous—may leave the edge of the biceps, may be directed along the internal intermuscular septum to the inner condyle of the humerus, and then be covered by the pronator teres as exemplified in the brachial trunk. The median nerve will accompany the larger or brachial division. The arteries, in the instances of high division, may be so largely connected together at or near the elbow as that the blood, in case of ligature of only one, would flow almost as uninterruptedly along the limb as if no attempt had been made to arrest it. For a specification of these different states the work must be consulted. In connexion with the union between the vessels, it may be remarked that the trunk of the humeral is sometimes bifurcated for a short distance, the portions however soon reuniting; and that small slender arteries, "*vasa aberrantia*," spring from the humeral, and join one of the arteries of the forearm, most frequently the radial. Certain peculiarities, or modifications in form of the muscles and nerves, may complicate the surgical anatomy of the brachial artery. Thus the vessel may be covered by a muscular process from the biceps to the internal intermuscular septum, or by a third origin to the biceps from the humerus. And in the instances of high origin of the radial, the other division—the trunk for the remaining arteries of the forearm—may be entirely covered to a greater or less extent by a muscular layer of the brachialis anticus. Of the accompanying nerve, the median, there is but little to notice; it may be over or under the mid part of the artery, or it may have two or more cross branches over the vessel.

As a caution in venesection, it may be well to refer to the position that the arteries of the forearm, in the instances of high origin, may have to the veins at the bend of the elbow. Both the radial and the brachial trunk may be side by side beneath the median basilic vein, separated only by the aponeurosis of the arm; or the radial may cross beneath the same vein, above the aponeurosis and in contact with the skin. When the ulnar has a high origin, it gradually inclines inwards to the elbow-joint from the line of the brachial. The author observes; "The origin being above the ordinary position, the vessel is almost invariably situated over the superficial muscles of the forearm. With so much constancy is it thus placed that I have never in more than a single example (plate 36, fig. 2) found the artery covered by the muscles. Most commonly the ulnar artery lies beneath the fascia, between it and the muscles, as represented in plate 32, figs. 1, 2, and 3. Only three instances have occurred under my observation in which it was altogether subcutaneous." With the position either beneath the aponeurosis or above it, the ulnar crosses beneath the median basilic vein, and is liable to injury. The mere mention of the different varieties in the situation of the arteries coursing to the forearm will be sufficient to convince all of the necessity of well examining the bend of the elbow before thrusting a lancet into a supposed vein. The position of the vessels at the bend of the elbow is well and strikingly represented in plate 41.

*Ligature of the brachial artery.* It is manifestly the duty of every surgeon who has not had opportunities of extended personal observation, to make himself familiar with the facts collected in the works of others, in order that, when about to place a ligature on the principal vessel of a limb, he may feel conscientiously prepared for any known irregularity that may chance to present itself. To a reflecting man the placing the life of an individual in jeopardy by an operation is a sufficient responsibility, and an unexpected state of the structures concerned must give great embarrassment, especially if this arises from want of inquiry. In the common operation of tying the brachial in the middle of the upper arm, the proceeding may be, so to speak, comparatively easy, if all the parts have their common position. But the surgeon may be interrupted at the outset by finding a large muscular slip of the biceps between the knife and vessel when the aponeurosis is divided, instead of the arterial trunk and the median nerve. Again, the artery may be absent from the border of the biceps, and may be placed along the internal intermuscular septum, where it should be sought if there is not any trunk near the biceps. It has been further said that frequently, about one in five, there are two arterial trunks in the upper arm, in consequence of a high division. When such a state exists it may be necessary, in hemorrhage from the hand that resists all local attempts to stop it, to arrest by ligature the flow of blood in the limb. Here, supposing the surgeon to attempt the ligature of the brachial at the common place, the rule of compressing the supposed vessel before tightening the thread, to see whether the bleeding is commanded by this manual proceeding, is most imperatively necessary; for one or both vessels may be required to be ligatured before the bleeding ceases. The surgeon, however, may make his incision at the edge of the biceps and find but one artery (the radial), which, when pressed, has little or no effect upon the bleeding part. He will immediately presume that there is a second trunk, but unless he is aware of the occasional departure from the common anatomical arrangement he will not find it. With the information now collected for him he will know that the second trunk, if not close to the other, will be found either along the inner intermuscular septum, viz. in a line to the inner condyle of the humerus, or near its usual situation, but deeply placed, and covered by fibres of the brachialis anticus muscle. Further, in a wound at the lower part of the upper arm, where the two vessels exist, the one (the radial) by the side of the biceps would be seen and secured, but the larger and deeper (the continuation of the brachial) covered by the muscular fibres might retract, and not be thought of or seen at first, though its pouring out of blood afterwards, at intervals, would endanger life, and puzzle the surgeon ignorant of the peculiarity here specified.

The femoral artery. The leading vessel that supplies blood to the lower limb merits the attention of the surgeon as much as that of the arm. Like the vessel of the upper limb, it remains undivided till it reaches rather below the joint (the knee), and then separates into branches for the leg. In the arm, the transposition of one of the branches of division from its usual place of origin to some point nearer the trunk of the body, is very frequent; but in the lower limb there is not any authentic notice of the branches of bifurcation of the femoral, viz. the anterior and posterior tibial, arising higher in the limb than the back of the knee-joint. Though the large terminal divisions are not transferred occasionally to the great trunk, the muscular branch or branches of the thigh so vary in the position of their origin as to influence greatly the result of the application of a ligature to the main trunk. The position of the varying branches, and the means by which they may be avoided, we shall next review.

The position of the femoral artery may be stated in general terms to be oblique in the front of the thigh, being placed in the hollow between the adductor and extensor muscles. For the first four inches it is uncovered by muscle, and is easily reached, but lower down it is concealed by the sartorius. Commonly the femoral extends as an undivided trunk from Poupart's ligament to the aperture in the adductor magnus, but it may be split in a part of its length, constituting a double femoral, similar to the condition occasionally met with in the brachial artery. This division may reach from a little below the large muscular branch, the profunda, to near the opening in the adductor, leaving the trunk single above and below those points. The peculiarity here referred to is so rare, that it was observed by our author but once in nearly 1200 bodies, yet as its existence created some difficulty in an operation for popliteal aneurism by Sir C. Bell, it will receive special consideration under ligature of the femoral. In the large vein that accompanies the femoral artery there are some variable conditions. In the regular order it winds behind the artery, being internal to this on the pubes, and external to the same beneath the sartorius. Instead of the vein being a single trunk, it may be divided into two, one being on each side of the artery, or one of these may cross the femoral, or the two be united by a series of small loops over the artery. The only muscle that has an irregular position to the artery is the sartorius. As before remarked, the femoral is uncovered by muscle for four inches, except when the direction of the sartorius across the limb is higher than common, for it may be so altered as not to leave two inches of space between the upper border and Poupart's ligament. This extent upwards of the muscle is mostly due to increased size, but Professor Quain supposes also that it may depend on the circumstance of the crest of the iliac bone being more curved inwards.

*Branches.* The chief interest connected with the branches of the femoral is the position of the large profunda, which determines the spot at which the parent trunk may be secured with the greatest prospect of success. This branch is the muscular offset of the thigh, and the anastomotic channel by which the circulation is carried on when the course of the blood is stopped in the main trunk; from it is given outwardly a branch (external circumflex), internally a second (internal circumflex), and the continuation, placed beneath the trunk of the femoral, is consumed in muscular and perforating branches. The profunda (deep femoral), or the external or internal circumflex branch of it, may be fixed to almost any part of the trunk of the femoral before this is covered by the sartorius, as stated by our author:

> "With the view of ascertaining the point with some degree of accuracy, the distance between the place of origin and the lower margin of Poupart's ligament (which was taken as the line of demarcation between the iliac and the femoral parts of the arterial trunk) was measured in several cases. The details of this examination are contained in the table (page 475 et seq.), and the following is an abstract of it:

| | |
|---|---|
| The entire number noted in the table | 431 |
| The deep femoral arose | |
| above Poupart's ligament, from the ex. iliac (plate 72, fig. 3) | 1 |
| under that structure (plate 72, fig. 4) | 7 |
| below it, ½ inch and less (plate 73, figs. 2 and 3) | 13 |
| more than ½, not exceeding 1 inch (plate 74, fig. 5), those measuring 1 inch, being 65 of the number | 86 |
| more than 1, not exceeding 1½ (plate 73, figs. 1, 4, 5, plate 74, fig. 4 | 183 |
| more than 1½, not exceeding 2 (plate 72, fig. 6, pl. 74, fig. 3) | 109 |
| more than 2, not exceeding 2½ (plate 73, fig. 6) | 19 |
| more than 2, not exceeding 3 | 12 |
| 4 inches (plate 72, fig. 5) | 1 |
| | 431 |

> "Thus, in about three fourths of all the cases (351 in 431), the origin of the deep femoral was from one inch to two inches, both these points included, distant from Poupart's ligament; and this may be said to be its usual position." (p. 520.)

If the origin of the profunda exceeds the distance of two inches from Poupart's ligament, the branch has a tendency to be resolved into the three portions before named, which may arise separately from the femoral trunk. In these instances the circumflex arteries spring somewhere near the parts to which they are distributed, so as to avoid, thus to speak, a backward course to their destination. In the last instance referred to in the extract, and represented in pl. 72, fig. 5, this disposition is exemplified; the internal circumflex arising half an inch below Poupart's ligament, the external circumflex about two inches, and the third portion for the perforating arteries ("profunda"?) four inches below the same part. From the observations made it appears, that no point of the femoral within four inches of Poupart's ligament should be selected for the application of a ligature, in consequence of the variations in the origin, either of the profunda or one of its branches.

*Ligature of the femoral.* This operation has been practised in two spots; the one near to Poupart's ligament above the origin of the profunda, the other where the vessel is about to be covered by the sartorius. The propriety of choosing the one or the other, according as each may be favoured or opposed by the facts set forth by our author, it is now our purpose to examine.

It has been stated that, between the line of Poupart's ligament and the origin of the profunda, the femoral measured, in 292 instances out of 431 noted in the table, only from one to two inches, and that in 183 of these it was not longer than one inch and a half. If it be further remembered that two large branches, the epigastric and circumflex, arise from the commencement, it must appear that the spot near Poupart's ligament is unfavorable for applying a ligature; for to whatever portion of this part of the femoral trunk the thread is applied, it will, in the majority of cases, be too near to branches either above or below to permit the healing process to go on undisturbed. Add to this, that the part of the trunk available for the operation may be shortened by the origin of the profunda being placed only half an inch or less from the ligament, by the transfer to it of branches of the profunda,* or by the epigastric and circumflex iliac descending rather below their usual origin, and it will be manifest that the knowledge obtained from the anatomy of the vessels would be opposed to the probability of ligaturing this portion of the femoral with success. Experience, should we not say too dearly bought, has conducted surgeons to a similar conclusion; ligature of the external iliac artery, or death from hemorrhage being the common consequence of the operation. In a wound of this part of the vessel it would be proper to secure the wounded part; but in other circumstances, such as hemorrhage from the lower part of the limb, or from a sloughing stump where the main artery cannot be recognized, for which this portion has been formerly tied, a surgeon would not be justified in proposing or attempting to place a ligature above the origin of the profunda.

The other spot in which the femoral is selected for the application of the ligature, is after it has given origin to the profunda and is about to be covered by the sartorius. The operation performed here is that of Scarpa, and is a modification of the one of Hunter, lower down in the thigh. Without discussing the merits of a particular proceeding, let us consider what anatomical circumstances may interfere with the obliteration of the vessel, or retard the progress of the surgeon. From the table it appears that the profunda arose more than two inches below Poupart's ligament in thirty-two bodies, and that in one it was found four inches from that structure. Therefore, as a branch or branches of sufficient size to interrupt the process of obliteration may be found three or four inches down the trunk, the ligature should be placed below their influence, or four to five inches from the ligament. In the first incision of the operation, the surgeon is to guard against a branch of the great saphenous vein crossing from the outer side of the thigh. Next, the sartorius muscle may entirely conceal the vessel, for it sometimes crosses the limb within two inches of the ligament, and "its position is such, that even above the middle of the thigh it appears more easy to expose the artery by turning the sartorius inwards than in the opposite direction." When the sheath of the artery is opened the vein should be, commonly, behind or to the outer side, but there may be two, as *venæ comites*, with or without communicating branches over the artery; these varieties in the veins cannot be disregarded, for they add greatly to the difficulty and danger of the operation. Finally, the operator may find the femoral trunk split into two of nearly equal size; these would be separated by a process of fascia, and join above the opening in the adductor muscle. In such a distribution what would be the practice to adopt? Such a conformation of the vessel was met with by Sir C. Bell, when tying the femoral for popliteal aneurism. At the time of the operation two vessels were not recognized, but the operator was perplexed by finding the pulsation return, nearly as distinctly as before, in a few seconds after the thread was tightened. A suspicion arose that the femoral was not included in the ligature, but Bell was certain he had tied the vessel, and resolved to wait the result. The death of the patient explained the mystery, and showed two femoral arteries instead of one. At that period the occasional existence of two arterial trunks was not known, and the surgeon could not do more. But now it is the duty of the surgeon to ascertain, before drawing the ligature on the coats of the vessel, that the pulsation can be made to cease in the tumour. Should the throbbing continue, notwithstanding the constriction on the one, the operator should divide the fascia, and look for a second trunk beneath or near the one found, in order that it may be also secured. The surgeon would most probably have some suspicion of the existence of this variety in the vessel by finding, as did Sir C. Bell, that pressure near Poupart's ligament stopped the pulsation in the tumour, but that compression lower in the thigh made no difference in either its beat or size, the finger in the former spot being above, and in the latter below the point of bifurcation.

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* Some curious transplantations of the internal circumflex to the contiguous branches are represented in plate 71.

The preceding analysis of a part of Professor Quain's work we offer to our readers as an inducement to farther examination. It is now our duty to inquire in what respect this work differs from those that have preceded it, and to assign to it its place in the rank of publications on medical science.

The writings with which Mr. Quain's work may be more especially compared are those of Haller, Scarpa, and Tiedemann. The volumes of the two former authors differ altogether; and their purpose has been expressed with much truth and candour by our author in his preface. The work of Tiedemann approaches much nearer in design, as it represents in a series of lithographic plates the arteries of the body according to their natural size, position, and course, so as to serve, as the author expresses it, for the study of anatomy, medicine, and surgery. This work contains also some representations of departure from the regular distribution, and has been the one hitherto used in acquiring the knowledge of the variations to which the vessels are subject. Much labour and research are conspicuous in its pages, and its publication must always ensure that commendation which an original work deserves. It consists of delineations of the anatomical distribution of the vessels according to the systematic description, and cannot be compared, for utility, with the present more extensive inquiries of Professor Quain. In the plates of Tiedemann more attention seems to be given to the small branches than to the large trunks, these being represented as mere cords without accompanying veins or nerves, which renders them almostvalueless for practical purposes. In those of Quain, on the contrary, the depth and distance are most exactly kept; and the accompanying veins and nerves with their variations, also the deviations in the form and extent of the neighbouring muscles, are always delineated so as to supply to the surgeon, at a glance, a just conception of the influence these may have in complicating the connexions of an arterial trunk. Tiedemann examined 500 bodies, and the plates are occupied with both the usual and unusual distribution, without any practical application, except in the single instance of aneurism from venesection. Quain has, as formerly noticed, observed 1040 bodies, "attention being always directed to those vessels, and to the points in their history, which seemed to be of importance in the practice of surgery." Although Tiedemann figures exceptions to the common branching of the vessels, he does not state how often each instance occurs. Quain not only enumerates the order of frequency with which any particular arrangement of the trunk of the vessel had been found, but gives tabular abstracts to assist the surgeon in deciding the probability of collateral or occasional branches interfering with the obliteration by the ligature. In the execution of the designs of the two there can scarcely be any comparison; those of Tiedemann are sometimes inaccurate, and appear rather plans than copies of nature;* whilst the figures of Quain are accurate and beautiful, and as truthful representations of the human body as any with which we are acquainted. The 'Anatomy and Operative Surgery of the

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* As we have alluded to inaccuracies in the work of Tiedemann, it is but just to point to some. Seeing the labour bestowed on reference to authority, we cannot but be surprised at the negligence pointed out by Mr. Quain in the two following instances:

In fig. 8 of plate ix is a drawing of a variety of the arch of the aorta, observed by Zagorsky, a Russian anatomist. On referring to the original essay there is not any drawing, nor is there mention made of the state of the aorta, whether this was directed to the right or the left side.

Again, Meckel has misquoted Huber's observations respecting the origin of a thyroid artery from the arch of the aorta, and Tiedemann follows in the same error.

The following are some anatomical errors in the plates.

In plates ix and x the occipital artery is drawn as superficial to the splenius muscle instead of beneath it.

Plate xvi represents the median branch of the ulnar artery as being over (it should be under) the annular ligament in its course to the hand.

In plate xxiv the inferior mesenteric artery is improperly delineated between two layers of the peritoneum, which extend from the aorta to the great intestine; and the vessel is made to end in small branches to the sigmoid flexure of the colon, but every anatomist knows that it descends into the pelvis as a large branch (superior hemorrhoidal) to the rectum.

In plate xxvii the epigastric artery is superficial to the tendon of the transverse muscle in the lower part of the abdominal wall, whilst it should be beneath both the muscle and the fascia transversalis.

Arteries' of Professor Quain must not then be thought to be a work altogether similar to that of the Heidelberg Professor. True is it that in both the arteries are described. The work of Quain differs essentially in being almost altogether practical, and bestowing most attention on those dispositions of the larger trunks and branches which are concerned in operations, and have occasioned difficulties to the surgeon. Since the appearance of the English work the German publication must cease to be considered the measure of our knowledge; for the latter is less extensive in observations, less accurate in anatomy, and less practical in its nature than Quain's 'Anatomy of the Arteries.'

But we do not confine our approbation to the fact of the work containing what Tiedemann does not supply; it has peculiar merits of its own which entitle all engaged in the publication to great praise. It is one of those undertakings which necessarily occupy many years in accomplishing, and are not often attempted, from the time, expense, and labour required in their execution. It is indeed a national honour to have originated and executed a work that will be handed down to posterity, with those of Haller, Scarpa, Hunter, Sœmmerring, &c. as one alike laborious in research, correct in its representation of nature, and worthy to be imitated. In conclusion, it only remains for us to express our anxiety that the facts collected by Professor Quain should be generally known by the wide circulation of his work. Our conviction is, that no one who peruses it will fail to augment greatly his knowledge of the vascular system. To every operating surgeon and every anatomist its possession is essential; and into all public libraries it must command admission as the unquestioned standard authority on the anatomy and operative surgery of the arteries of the human body.

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## ART. X.

*Die männlichen und weiblichen Wollust-Orgäne des Menschen und einiger Säugetheire in anatomisch-pathologischer Beziehung untersucht und dargestellt.* Von Dr. G. L. KOBELT, &c. Mit 5 Tafeln.——*Freiburg*, 1844.

*The Male and Female Organs of Copulation in the Human Species and some Mammalia, examined and demonstrated in their Anatomical and Physiological Relations.* By Dr. G. L. KOBELT, Prosector at Freiburg, &c. With 5 Plates.—*Freiburg*, 1844. 4to, pp. 66.

THIS is such a book as it does one's eyes good in these times to see. Tired with the microscope, and the long lines of chemical formulæ, they rest with thorough satisfaction on the large type of a full sized quarto full of old-fashioned anatomy. No thousandths of inches to calculate; no rows of naughts for decimals of French lines; but good old coarse and fine injections, and muscles in many layers, and fasciæ, visible nerves and arteries and great veins, and very moderate physiology; all that a prosector ought to know and be enthusiastic about—here it is, and the contrast with our last six months' reading is really quite delightful. The author needed not to apologize for the absence of any microscopic anatomy; the negation is one of the positive charms of his work.

We suspect our readers will be as glad as we were to find some new dissectional anatomy, and we shall therefore extract all we can, and arrange it not as Dr. Kobelt does, on a somewhat fantastic plan, but according to a system of anatomy: we will point out whatever is new to us in the several structures described in the anatomy of the copulative organs; omitting all that may be easily found elsewhere.

*Corpus cavernosum penis.* The crus penis is commonly said to arise on the inner lip of the ascending ramus of the ischium, and to unite with that of the opposite side *below* the arch of the pubes; but, when the parts are well injected, Dr. Kobelt says, that both the crura penis and its root lie, not below, but before the arch of the pubes; and as it were only applied against it, being fixed by their posterior parts to the sharp angle of the outer lip of the descending rami of the ossa pubis. Each crus enlarges before its union with that of the other side into a considerable bulblike swelling, a true *bulbus corporis cavernosi penis*, which has been hitherto completely overlooked, probably, because it cannot be seen except in a well-injected penis, and is various in its degree of development. Just in front of these, at the part where the crura unite, the body of the penis is of comparatively small circumference; but beyond this contracted part it enlarges and remains of nearly equal size, to its connexion with the glans.

*Arteries of the corpus cavernosum.* These are not simply one to each side, as they are usually described; but, according to Kobelt, after the internal pudic artery has given off the artery of the bulb, and has divided into the A. dorsalis and the A. profunda penis, the last-named vessel (the artery of the corpus cavernosum of most writers) sends a branch half a line in diameter, from above downwards and within outwards, into the bulb of the crus penis, whose branches diverge widely directly after it has penetrated that part. One long branch goes backwards to the point of the crus penis; and another forwards into the body of the corpus cavernosum, where it anastomoses with the proper artery of the corpus cavernosum, which is the continuation of the A. profunda penis. The two A. profundæ penis anastomose at the root of the penis where the crura diverge, and form a short arch, from the convexity of which the A. corporis cavernosi of each side is given off.

*The veins of the corpus cavernosum* terminate in four or more sets. 1. Several, not commonly considered, ascend from the groove between the C. cavernosum and C. spongiosum, and winding round the sides of the former, end in the V. dorsalis penis. But of this set, also, some veins situated most posteriorly, pour their blood into the venous network by the side of the root of the penis, and not a few ascend to the cutaneous veins of the wall of the abdomen. 2. Numerous short branches from the interior of the C. cavernosum pass straightway through the fibrous covering, especially along the median groove, into the V. dorsalis. 3 Many pass in the angle between the crura penis into the prostatic and vesical venous plexus. And, 4, some pass through the inner surface of the crura penis and convey the blood partly into the internal pudic veins; and partly, by turning outwards, into the obturator veins.

*Bulb, glans, and corpus spongiosum urethræ.* It is only in his description of the first of these organs that we find Dr. Kobelt saying anything that is new as well as good. In its injected state, he says, the bulb of the C. spongiosum presents posteriorly two lateral hemispherical swellings, which are separated in the middle line by a longitudinal depression. This depression, of which an indication may be traced beyond the middle of the C. spongiosum urethræ, is caused by a septum which divides the posterior part of the bulb into two lateral symmetrical halves; but, anteriorly, is gradually lost. In the dog and stallion, the septum is very distinct: in man it can hardly be overlooked, and is noticed by Mr. Guthrie. The two portions of which it indicates that the bulb is composed, are the analogues of the completely divided portions of the bulb and C. spongiosum in the whole of the Marsupial tribe.

Moreover, each of these lateral "hemispheres" of the bulb is, in man, separated by a distinct furrow from a third superficial elevation (*colliculus bulbi intermedius.*) which is situated above and between them, but does not extend so far backwards as they do, and gives passage to the membranous part of the urethra, the vessels and nerves of the bulb, and the ducts of Cowper's glands.

There is, of course, no line of separation between the C. spongiosum of the urethra and that of the bulb: but neither does the erectile tissue terminate at the bulb; a portion (hitherto almost unnoticed,) is continued from it in a thin layer, which extends upwards and backwards, between the mucous and muscular layers of the whole circumference of the membranous part of the urethra, and is thence continued through the prostatic part into the neck of the bladder, between the coats of which it expands, its veins radiating and soon terminating in the external vesical veins. This portion of erectile tissue is especially developed in the caput gallinaginis, which derives from it all the properties of an erectile organ; and presents, when fully injected, all the characters of such an one. And it is this tissue, also, which is sometimes the seat of hemorrhoidal dilatations of veins. It would appear to serve to prevent the semen in emission from passing backwards into the bladder when, being turgid, the caput gallinaginis nearly fills the urethra; and it explains the difficulty or impossibility of discharging urine in the erect condition of the penis.

*Arteries of the bulb.* That which is commonly (or at least in the completest systems) described as a branch of the proper artery of the bulb going forward in the C. spongiosum urethræ to the glans, Kobelt says, is a separate branch of the pudic, in all cases except those in which the pudic divides into the dorsal and deep arteries of the penis before it gives off the artery of the bulb. When thus derived from the internal pudic, this artery (the bulbo-urethral) comes off about sixteen lines anterior to the artery of the bulb. It enters the penis at the angle between the crura, and after anastomosing with branches of the artery of the bulb, goes straight forwards in the upper wall of the C. spongiosum urethræ to the glans, where its branches anastomose with those of the A. dorsalis penis.

Thus, therefore, while the C. cavernosum penis is supplied with only one pair of arteries, the C. spongiosum, including the glans and bulb, receives three pairs, all of considerable size.

*Veins of the C. spongiosum, glans, and bulb.* The veins of the glans terminate in three sets. Those of the first set, passing over its posterior margin, form the commencement of the V. dorsalis penis; the second set run more deeply between the ends of the corpora cavernosa penis, and the hollow surface of the glans into which those ends fit, and, ascending between those parts, join the V. dorsalis; the third set is composed of veins which pass from the second set into the interior of the

C. cavernosa penis, and form communications between its veins and those of the glans.

The veins of the C. spongiosum urethræ are divided by Kobelt into four sets. 1. Those which pass out from the furrow on each side between the C. cavernosum and C. spongiosum, just behind the glans, and ascending obliquely backwards on the side of the C. cavernosum, join the V. dorsalis. 2. There is a plexus of veins, not hitherto described, but visible in well-injected specimens, between the upper surface of the C. spongiosum and the hollow in the C. cavernosum in which it lies. It is derived from branches which penetrate, in two nearly symmetrical rows, the upper wall of the C. spongiosum; from it the blood is carried by veins which ascend obliquely from the groove between the C. spongiosum and C. cavernosum on each side; and these veins, instead of passing like the similar veins of the first set into the V. dorsalis, pass to the side of the penis, where uniting with scrotal veins they form a network, from which the blood is conveyed to the inguinal cutaneous, the obturator, and the pudendal veins. 3. From the plexus just described on the upper surface of the C. spongiosum, veins pass, together with others which go directly upwards, from the C. spongiosum into the C. cavernosum, with the veins of which they form communications. 4. Veins passing out of the sides of the C. spongiosum also communicate freely with adjacent cutaneous veins.

The veins of the bulb are distributed in two modes. 1. Most of them pass from the back of the bulb under the pubic arch to the prostatic plexus. 2. Others from the *colliculus bulbi* (or third lobe) go outwards and backwards, and unite with the pudic veins.

*Muscles of the penis.* We should have thought that these two, if any, muscles had been already well enough described. But Dr. Kobelt says they have not, and that if the penis be first well injected any one may see more than he knew before. His account of them is as follows: First, of the *bulbo-cavernosus* or *accelerator urinæ.*

"It is divisible into three portions. Like the transversus perinei it may be separated into two layers. The fibres of the superficial layer arise from the well-known median tendinous line: they comprise two sets, which have the same general origin, and both proceed alike upwards and outwards, but at their insertions they diverge. 1. The fibres of the posterior three-fourths of this superficial layer pass upwards and outwards round the lower and lateral surfaces of the bulb, and pass (the posterior sooner than the anterior,) into a tendinous lamella, which turns itself in between the corresponding crus penis and the bulb, and over the upper part of the latter to unite with its fellow of the opposite side. This division, therefore, surrounds the bulb in the shape of a musculo-fibrous sheath, and will compress it from below upwards and from behind forwards: it may be called, *M. compressor bulbi proprius.*) The external sphincter ani and the transversus perinei superficialis, are connected with it in the middle line.

"2. The anterior fourth of the fibres of this superficial layer passes bridge-like over the groove between the C. cavernosum penis and the bulb; then the fibres wind forwards and upwards round the slightly constricted part of the penis which is seen (but hardly noticed) in this situation; and end in a fibrous layer, which is common to them, and the similar fibres of the opposite side, and covers the dorsal vessels and nerves. In this tendon (or fibrous layer) short muscular fibres are sometimes interwoven: Krause* has figured them, but ascribes them to the tendon of the ischio-cavernosus. The action of this division extends not only to the anterior part of the bulb, but, at the same time, to the body of the penis and its dorsal vessels and nerves: it is the true *M. bulbo-cavernosus,* or *M. constrictor radicis penis.*

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* In Müller's Archiv, 1839, Heft i.

"3. The deeper layer consists, also, of two symmetrical lateral halves, but extends over only the posterior round portion of the bulb. The fibres arise from the median tendinous constriction of the bulb, extending backwards to the *colliculus bulbi.* The anterior fibres pass almost transversely outwards round the anterior border of the corresponding hemisphere of the bulb: the middle cover the convexity of the hemisphere: and the most posterior go almost straight forwards in the furrow between the hemisphere and the *colliculus;* and then, converging thus with the anterior fibres they are attached together to a small thin tendon which is connected with that of the opposite side in front of the situation at which the membranous part of the urethra dips into the bulb. The two muscles thus surround both the hemispheres in the form of a sling, or a closely applied muscular hood. They are separated from the superficial layer by cellular tissue in which nerves run, and are also distinguished by their direction and insertion. They might be considered distinct muscles, and named *M. compressor hemisperium* (i ?) *bulbi.* Their fibres (like those of the other layers) are transversely striated." (pp. 15-7.)

In explanation of the action of this muscle the author implies, that it serves to maintain and increase the turgescence of the glans penis, and thus to excite those nerves on which the peculiar sensation of the venereal orgasm depends. The turgescence is maintained both by retarding the reflux of the venous blood and by accelerating the onward course of that in the arteries. The retardation of the venous stream is easily and commonly accounted for by the pressure of the contracting muscle on the large veins; and this is accomplished according to the author's peculiar description of them, by the anterior portions of the muscles (M constrictor radicis penis) compressing the V. dorsalis penis* under their common median tendon, at the same time that their upper margin (M. compressor hemisphærii) compresses the veins of the bulb which emerge at the *colliculus.* The acceleration of the arterial current by the action of the same muscles is illustrated by a new and ingenious observation. On exposing the bulbo-cavernosi muscles in a dog just strangled or during strangulation, the author found that every time he irritated the glans penis (which, as well as the bulb, was always more or less turgid) the muscles suddenly twitched once or more, and forced the blood from the vessels of the bulb with a rapid jet through the vessels of the C. spongiosum urethræ, into those of the glans, which was thus, each time, made quite tense and glistening. Then, when the muscles ceased to act, the bulb again became turgid, and again might be compressed and partially emptied by fresh contractions of the muscles. Sometimes, a single irritation of the glans sufficed to produce a rhythmical succession of contractions of the bulbo-cavernosi muscles, so that the blood was forced from the alternately filled and emptied bulb, into the glans in a succession of jets which were like those produced by the alternating systole and diastole of the heart. Similar compression of the bulb could be felt when the hand was pressed on the perineum of a dog during copulation: and in men, also, the contraction of the same muscles produces a similar increase of the turgescence of the glans. But in the strangulated dog no irritation of the penis which did not implicate the glans or the dorsal nerves produced any such effect.

From these facts the author deduces that the peculiar sensation of the venereal orgasm (Wollustgefühle,) is due to the sudden compression and tension of the nerves which is thus produced, just as in congestions of the eye and ear subjective sensations of light and sound involuntarily impress themselves; and that "the two factors of this organico-physical process, the sensitive glans and the irritable muscular apparatus of the bulb, are related to each other as mutual and alternate excitors." (p. 20.)

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* Neither Müller nor Kobelt has ever found in man Dr. Houston's supposed M. compressor venæ dorsalis.

Of course Dr. Kobelt denies to these muscles any such function as is implied in the name "accelerator urinæ," which they often bear. They have not even such an arrangement as could accelerate the flow of either urine or semen; and comparative anatomy shows that when the bulb is bifid, the corresponding muscles leave the urethra to invest the two divisions of the bulb, the compression of which is their sole function; and that, generally, their size is adapted not to the size of the urethra but to the size of the glans into which they have to pump the blood. The only real *accelerator* muscle in either man or other mammalia is, as Cuvier says, the compressor urethræ, the muscle surrounding the membranous part of the urethra.

In the last place (so far, at least, as the male sexual organs are concerned,) we shall quote the author's account of the ischio cavernosi muscles: which, like the last, he has examined especially when the penis has been distended, a measure which he considers almost necessary for displaying the exact extent and arrangement of the muscles.

> "*The ischio-cavernosus muscle* corresponds on the whole to the general form of the crus penis, but surpasses it considerably in length. The middle or chief portion, arises between an inch and an inch and a half below the obtusely-rounded end of the crus penis, from the inner surface of the tuber ischii; it runs, first, straight upwards behind the ascending ramus, and then, increasing in size, turns under the ramus of the os pubis to pass to the crus penis, where it, for the most part, ends in the apex of a triangular tendinous lamella, which so covers the bulb-like enlargement of the penis that its basis lies in the constricted part of the penis near its root, and its lower angle at about the middle of the crus penis. Other muscular fibres come on the inner surface of the crus from the inner lip of the ramus of the os pubis, and go obliquely upwards and outwards to the inner margin of the tendinous lamella just mentioned. And a third portion of the muscle arises from the outer lip of the ramus of the os pubis, and goes upwards and forwards to be attached to the outer margin of the same lamella, or aponeurosis. Thus the M. ischio cavernosus is no band-like muscle, but a hollow or shell-shaped one which covers the whole free surface of the crus penis and its *bulb*." (pp. 29-30.)

In the flaccid state of the penis the ischio-cavernosus slightly retracts it; but

> "During the artificial filling of the C. cavernosum [by injection] it expands itself over the whole convex surface of the crus and its bulb, as they expand and become rounded.......This process, we may also assume, takes place when the parts fill during life. When, now, the muscle, distended into a pouch-like form, presses both concentrically and longitudinally, the blood comprised within it must be pressed from it, so as to distend still more the already full body of the penis. But if the latter be incapable of receiving any further addition of blood, and thus the crus penis, and its bulb can empty themselves only imperfectly, or at last not at all, then have the C. cavernosum penis and the crura attained the highest degree of expansion and rigidity. Now, with every contraction of the two M. ischio-cavernosi, the external form of the penis will appear in its sharpest outlines, and it will assume its due position in regard to the pelvis." (pp. 33-4.)

These muscles, like the bulbo-cavernosi, were seen to contract in the strangled dog every time the glans, provided it was turgid, was stimulated. And a similar contraction, when the penis is more or less erect, may be felt in the human perineum; so that the completest filling of the erectile tissue, produced by the coincident *pumping* contractions of the M. ischio- and bulbo-cavernosi will ensue on each successive irritation of the glans, producing coincident reflex actions of these muscles. And their coincident action is necessary; because if one pair alone acted, they might press the blood from one portion of the erectile tissue into the other (e. g. from the C. spongiosum urethræ into the C. cavernosum penis, if the M. bulbo-cavernosi alone contracted), and so neither portion would be made turgid.

Such is our author's account of the male organs of copulation, and he must be admitted to have made in it a handsome contribution to our knowledge of anatomy. We shall next follow him, more briefly, in his description of the corresponding organs of the female.

That which he chiefly has in view is to show the exact analogy existing between certain of the copulative organs in the male and female; an analogy which has been commonly allowed as a general fact, but has not yet been strictly and particularly demonstrated. We shall here follow the arrangement of the author more nearly than in the preceding division of the subject. The principal analogues of the male organs which he describes are the female organs corresponding to the glans, C. spongiosum urethræ, bulb, and bulbo-cavernosus muscle.

The analogue of the glans penis is, of course, the *glans* clitoridis. Its form, the author says, corresponds exactly to that of the glans penis; and the peculiarities which, in different species, the latter organ presents are always, in the same species, exactly imitated in it: in those species, also, of which the males have an os penis, as the otters, hares, cats, &c., the clitoris of the females has a similar portion of bone or cartilage in it.

The nerves of the glans clitoridis are even much more abundant than those of the glans penis: the two dorsal nerves of the former are, in proportion, three or four times larger than those of the latter. Each of the nerves runs, usually divided in three branches, to the margin of the glans, and in its substance they form intricate plexuses; but their size, where they penetrate, is such, that one might wonder where they can find room to be distributed in so small and so vascular an organ. They have the same relation to the constrictor Cunni muscles as the corresponding nerves of the glans penis have to the bulbo-cavernosi.

The author next demonstrates, as the analogue of the male C. spongiosum urethræ, a venous plexus, which he names (not very instructively) *pars intermedia:* and here we had better remind the reader that the erectile tissue of the C. spongiosum urethræ has no essential relation to the urethræ as a *urinary*, but only as a *seminal* canal, and that therefore an organ may be analogous to it without having any connexion with the urinary apparatus, provided it has corresponding relations to the analogues of the glans and bulb. As then the C. spongiosum urethræ is a *pars intermedia* between the glans penis and bulb, so is the organ or part now to be described a *pars intermedia* between the glans clitoridis and that which, in the female, corresponds to the bulb.

The *pars intermedia*, then, is a venous plexus formed of variously convoluted, but chiefly longitudinal veins, which lies, on each side, under the body of the clitoris, and tends outwards, diverging from it and becoming broader. Its upper and smaller part is formed by veins, which may be divided into three sets; namely, 1, some which form lateral branches of the V. dorsalis clitoridis; 2, those which penetrate the lower surface of the body of the clitoris, and are exactly analogous to the communicating veins between the C. spongiosum urethræ and the C. cavernosum penis; 3, others which come to it from below, from the frenulum, nymphæ, and labia, and which correspond to those described as the fourth set of veins of the C. spongiosum penis.

The arteries of this *pars intermedia* are branches of the internal pudic, which correspond to the bulbo-urethral arteries of the male.

By their relative position between the glans clitoridis and the organs next to be described—their venous spongy texture, the origin and destination of their veins, and the origin of their arteries,—the author thinks that it is demonstrated that these organs are the analogue of the C. spongiosum urethræ. J. F. Meckel and Autenrieth considered the nymphæ to be the analogues of the C. spongiosum; but Kobelt has repeatedly injected them without detecting a trace of cavernous texture in them. We think he has fully established his point; and his evidence is strengthened by what we have next to say of the analogue of the bulb.

The *Bulbus Vestibuli* has an interesting history given in detail by the author, and of which the outlines may be traced by the synonymes he gives it; namely, *plexus retiformis*, R. de Graaf;* *crura clitoridis interna*, Swammerdam;† *plexus cavernosus*, Tabarranus;‡ *corpus cavernosum*, Santorini;§ *bulbe du vagin*, of the French; semi-bulb, Taylor,‖ &c. It is an immediate continuation and extension of the posterior parts of the two *pars intermediæ*. It is therefore composed of two portions, one of which is placed on each side, and has the shape of a full leech. It (i. e. the portion on each side) is attached to the ramus of the pubic arch with its larger bluntly rounded (tail) end directed downwards and backwards; its smaller (head) end lying above, under the root of the clitoris; its convex (back) surface resting on the ramus; and its concave (abdominal) surface turned to the cavity of the vagina; so that the two together occupy the space between the beginning or vestibule of the vagina and the rami of the pubic arch. When injected it is, on an average, an inch and a quarter long, six or seven lines broad, and from four to six lines thick. In the uninjected state it is like an almond-shaped swelling, of a dark blueish-red colour, and giving out, when cut, a half-coagulated viscid bloody fluid, like that from the bulb of the male. It is composed of a close-packed plexus of intricately anastomosing veins, which have a general longitudinal direction, and of which the mass is inclosed in a fibrous investment.

From numerous injections the author gives this account of the veins of the *female bulb*. They are divisible into four sets. 1. Branches of communication, at the anterior small end of the bulb, with the veins of the *pars intermedia*. 2. Branches of communication at the same part, between the bulbs of opposite sides, or rather between the two divisions of the bulb. 3. Those from the posterior margin of the upper part, which pass to a very dense and delicate venous plexus in and upon the upper wall of the vagina, and in the neck and even the walls of the bladder. These correspond to the continuation of the spongy tissue of the male bulb along the membranous and prostatic portions of the male urethra, as already described. 4. And lastly, the proper efferent veins of the bulb (the analogues of the proper *venæ bulbosæ* of the male,) which proceed from the lower and larger end of the bulb, and empty their blood, partly into the pudic, and partly into the external hemorrhoidal veins.

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* De mulierum organis.

† Miraculum naturæ seu uteri muliebris fabrica.

‡ Observationes anatomicæ, p. 65.

§ Observationes anatomicæ, § iii, p. 207.

‖ Dublin Journal of Medical Science, vol. xiii, p. 104.

The arteries of the female bulb are arranged like those of the male; but so little is commonly said about the distribution of the internal pudic artery in the female, that we shall give the author's account of it complete.

"After the common pudic artery has given off the transversalis perinei, it divides into two nearly equal branches, one of which (A. labialis posterior,) passes round the lower end of the bulb and goes to the labium and nympha. The other branch, or properly the continuation of the pudic runs along the posterior margin of the bulb upwards towards the root of the clitoris. In this course it gives off—

"1. A tolerably large branch into the posterior round part of the lower end of the bulb (arteria bulbosa), noticed hitherto by Theile alone.

"2. A branch of uncertain size to the anterior wall of the urinary bladder (A. vesicalis anterior; constant but not hitherto described.) At this point the artery divides into—

"3. The A. dorsalis clitoridis; and

"4. The A. profunda clitoridis. And this, then, gives off—

"5. A small vessel which passes through and under the crus clitoridis to the pars intermedia......and

"6. A small branch in the crus clitoridis. Lastly, its continuation forms with the corresponding vessel of the opposite side, behind the bifurcation of the clitoris—

"7. An anastomotic arch; from which there proceeds on each side—

"8. A small branch which sinks into the corpus cavernosum." (p. 46.)

Some have regarded this bulb as analogous to the C. spongiosum urethræ, (as Krause and Theile;) some have compared it with the male bulb, (as Louth, Taylor, Malgaigne;) but they have not shown distinctly the grounds of comparison. Dr. Kobelt, adopting the latter opinion, gives the particulars of the analogy thus briefly:

"Its bulbous form, its internal texture, its immediate parenchymatous continuation with the representative of the C. spongiosum urethræ (the *pars intermedia*), its connexion with the spongy tissue of the membranous part of the urethra and the neck of the bladder, its afferent and efferent blood-vessels, its nerves, its relation to Cowper's gland, and, lastly, the circumstance of its being covered by a compressing muscle, agree in so multiform and yet so complete a manner with all the similar relations and characters of the male bulb, that we must regard it as the equivalent of that organ. The division into two lateral halves cannot disturb this conclusion; this is to be regarded only as a persistence in an earlier type, which is observed at one period in the male embryo as well, and of which the traces are to be recognized in even the developed male bulb, in the duplicity of its hemispheres, its muscles, vessels, and nerves, as well as in its permanent (partial) septum, &c. Nay, we have seen above that a partial division of the male bulb is constant in many animals, and a complete division of it in the marsupialia throughout life If one imagines the male bulb divided, and its halves diverging to the sides and backwards, they would have to be looked for in no other place than that in which the corresponding half-organs in the female are found. And, on the other hand, if the two bulbs of the female be pressed together towards the middle line, we should have, in respect of position and form, a complete male bulb, with a septum consisting of two layers, a fibrous sheath, a muscular covering, &c." (pp. 47-8.)

It is by the arrangement of this muscular covering that the analogy is completed; for the author follows Sabatier, Winslow, and many others in regarding the M. constrictor Cunni (as it has been erroneously called,) as the analogue, both in anatomy and in function, of the male M. bulbo-carvernosus. His description of it differs from those of nearly all his predecessors, except the singularly accurate Santorini, and its accuracy may be ascribed to the advantage acquired for dissecting it, by previously injecting the veins and putting it on the stretch. He says:

> "It is always a double muscle. It arises with a broad expanded base from the perineal fascia, about midway between the orifice of the anus and the tuber ischii Its fibres are here often widely spread out, so that the inner ones sometimes mingle with those of the sphincter ani, or the outer ones are in contact with the ascending ramus of the ischium From this origin it proceeds, gradually becoming smaller and converging with that of the opposite side, forwards and upwards towards the clitoris, and covers or rather surrounds in this course the *bulbus vestibuli* in its whole length and breadth. .... It consists of two flat portions, of which the posterior with its band-like tendon slips through between the upper and posterior margin of the bulb and the clitoris, and unites with the corresponding portion of the opposite muscle in a common broad tendinous layer which is placed over the cavernous venous tissue of the urethra. The anterior flat portion ascends, on the contrary, to the dorsum of the clitoris and unites with that of the opposite side in a flat thin tendon under which the dorsal vessels and nerves pass. Not unfrequently there is, by the side of the clitoris, a small piece of muscle, woven into this tendon, and corresponding to that represented by Krause in the penis." (pp. 48-9.)

Here we conclude, for the author's physiology is, as we have said, not so good as his anatomy; and his account of the applications of the organs which he has described is a little too vivid for these pages. If our notice of his work should meet his eye, he may be assured that he will be regarded by many of his brethren in England as among the best of demonstrator-anatomists, a thoroughly good observer, and a very worthy pupil of the veteran Tiedemann.

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## Art. XI.

*Darstellung einer sicheren und schnellen Heilmethode der Syphilis durch Jodpräparate.* Von Dr. Georg Moj'sisovics.—*Wien*, 1845.

*An Account of a certain and rapid method of curing Syphilis by Preparations of Iodine.* By Dr. G. Moj'sisovics.—*Vienna*, 1845. 8vo.

From the title of this work, and from some passages in the author's preface, we should be led to imagine that it was merely a practical account of the treatment of syphilitic affections, pointing out some decidedly new and certain line of practice in the disease in question. It contains, however, also a full description of the various preparations of iodine as well as the writer's views respecting the nature and pathology of syphilis, (under which title he also includes gonorrhea), the treatment of strictures of the urethra, of primary and secondary syphilis, and a few cases to illustrate his remarks. In the present notice we shall confine ourselves principally to the practical part of the treatise.

Dr. Moj'sisovics' field of observation in the treatment of disease by iodine and other means has been sufficiently extensive to give considerable credit to any work of his upon practical subjects. He is one of the principal surgeons in the large general hospital in Vienna, and is also employed in private practice in that city, in which scrofulous diseases, and others requiring the use of iodine, and usually treated by that remedy, are peculiarly prevalent. In his preface he expresses a hope that his work will be welcome to the medical profession from its containing "a description of a plan of treatment by means of which the most obstinate and inveterate cases of syphilis can be radically cured within three or four weeks, by the careful use of the preparations of iodine;" and if this is so, he certainly has a right to hope that his book will be welcome.

Dr. Moj'sisovics had, for many years, been in the habit of employing iodine in various forms and with very variable success, and being dissatisfied with the want of consistency in the effects of his remedy, he endeavoured, but for a long time in vain, to discover the cause of his occasional failure. Having, as he considered, at last discovered it, he gave an account of the result of his investigations in a paper read before the Imperial Society of Physicians in Vienna, in Oct. 1839, which was printed in the 'Austrian Journal' for the month of March 1840. This paper, he has reprinted in the commencement of the present work without any alteration. It is entitled "The determination of the circumstances which render the effects of iodine curative or injurious." The chief causes of the disappointment which Dr. Moj'sisovics so often met with in the effects of what he terms a specific remedy in cases of scrofulosis and syphilis, were impurity of the drug, and its administration in an improper form; and the injurious consequences which occasionally followed when the medicine was in a pure state were, according to his views, owing to decomposition even after it was swallowed. For a certain amount of the disrepute into which it fell, he blames Lugol who allowed his patients to walk about during the treatment, and paid but slight attention to regimen. Our author says that "this may perhaps do for Frenchmen, but when a German has caries in any joint, it swells, becomes inflamed, painful, changed in form, stiff or contracted, and any attempt at motion is exceedingly painful."

The chapter entitled "Pharmacology of the preparations of iodine," contains a description of thirteen varieties: viz. pure iodine, the tincture, amylum iodatum, the iodides of barium, iron, lead, sodium and potassium, the iodide and biniodide of mercury, the ioduretted syrup of iron, iod-ammonium and the various mineral waters of which this body is an ingredient. The author objects to iodine in a pure state, and to the tincture, on account of the insolubility of the substance itself when it is precipitated upon the lining membrane of the mouth, pharynx, or stomach, and to the latter (the tincture) he attributes the greater share of the disrepute into which the remedy has occasionally fallen. In conjunction with the iodide of potassium, iodine is sufficiently soluble to render it a serviceable form in which it may be administered. The amylum iodatum deserves no mention with reference to its practical importance, and the iodide of barium in the only case in which he administered it produced hemorrhage from the uterus, undoubtedly caused by the medicine, for it recurred several times immediately upon its resumption. The iodide of iron was found exceedingly useful in some cases of chlorosis, and leucorrhea, administered internally, and in the form of baths; it is easily decomposed, and on this account there is an inconvenience in its exhibition. The following extract giving an account of a mineral spring containing this salt is curious:

> "In Hungary, on the borders of Styria and Austria, is a mineral spring formerly known to the Romans, the water from which has been used for a very long time as a bath and as an internal remedy. The village in which it appears is called Tazmannsdorf, and there is a well appointed establishment there. For a long while the water was considered to contain merely carbonate of iron, but chemical analysis has proved the existence of a quantity of iodide of sodium and oxide of iron, besides many bicarbonated salts. By this natural union of iodine and iron the powerful effect of the water upon the nutrition, and upon a low or enfeebled condition of the nervous system is easily explained. The beautiful scenery in the neighbourhood and the inexpensive life, render it a still more desirable spot."

The iodides of lead and sodium have been too little tried by the author, to enable him to speak with certainty respecting their remedial use, but the iodide of potassium (kali hydrojodicum, or kalii bijodetum) has been tried by all, and by Dr. Moj'sisovics is considered to be by far the best of all the preparations of iodine. Its effects are said to be increased activity and power in the function of digestion, from its operation on the mucous membrane of the alimentary canal, and afterwards by an extension of a similar action, a state of the Schneiderian membrane comes on, exactly resembling a common catarrh. "This appearance is favorable, as it proves that the individual is susceptible of the powers of the remedy." The dose usually recommended, merely for increasing the power of the absorbent vessels, is a half grain of iodine, with two or three grains of iodate of potassium, in a considerable quantity of water taken before dinner. In syphilis and scrofulosis, larger doses may be given: an infant, for instance, had five grains, and a child, six years old, began with half a scruple, increasing three grains every fourth day, up to half a drachm. At the age of fifteen the dose at which we may commence is a scruple, gradually increased to a drachm, even to two.

The effects of saturation with the remedy are described as the exanthema iodicum, which shows itself in dark red definite spots of various sizes, spreading over the whole body, remaining without the formation of scales, and disappearing only after a long time; this is called the E. iodicum afebrile, in contradistinction to the E. iodicum febrile, which is seen in syphilitic patients, causes a desquamation of the entire cuticle, and may be considered as a certain criterion of radical cure. The facility with which the iodide of mercury undergoes decomposition has prevented it from being much used internally, as it is apt to produce inflammation of the stomach and bowels, in the same way as iodine itself. In the form of ointment, it is exceedingly useful in promoting absorption; the strength recommended by the author is gr. x to ʒij, (that of the London Pharmacopœia is gr. xv to ʒij,) which quantity is to be daily rubbed into the part affected. The biniodide of mercury is also but little used internally, it is, however, an excellent external application, in the strength of ℥j, to half an ounce of simple ointment, rubbed in three times a day. (The strength of the preparation in the London Pharmacopœia is ʒj to ℥j.)

"The action of this ointment (applied as a plaster spread upon leather) is the following: In the space of half an hour or an hour, varying according to the spot where it is applied, or according to the individual constitution, burning pain comes on which in some persons lasts two or three hours, but in very sensitive subjects even longer. In the third hour the cuticle begins to shrivel, and then rises in little vesicles filled with transparent fluid. They increase in size, and form at length a single bladder, and the fluid becomes opaque. On the second day, the raised epidermis is thicker, the quantity of fluid lessened, and upon the third day the thick and solid epidermis separates in the form of a yellowish white crust. When this has fallen off, the part underneath is seen to be already covered with new epidermis, and entirely healed, but slightly red and sensible. This is the course when the bladder is not opened; when it has been torn, the part becomes painful, and discharges pus for a long time. After three days have elapsed, the application may be made again. The patient may be allowed to walk about during the painful stage, if it be not applied upon the perineum or the lower extremities."

In cases of inflammation of the external tunics of the eye, (blepharophthalmoblenorrhœa,) it may be applied to the eyebrow; the author adds however, "it is of course understood that in this disease, bloodletting, emetics, cold applications, and the sulphate of quinine must not be omitted. I have been fortunate enough by this treatment to save the eye in every case where the patient consulted me sufficiently early." Now in the first place, even when there is ulceration of the cornea, the disease may almost always be cured, if not easily by the above mentioned list of remedies, at any rate by more simple means, and it is no great subject for boasting to be able to cure a complaint on the condition of the patient's applying sufficiently early in the progress of the disorder. In otitis and parotitis it is to be applied behind the ear, acting in a way analogous to the cantharides, but more quickly, and causing rather an effusion of lymph than of serous fluid.

"In bronchocele its powerful effect may be mathematically shown, if the tumour is measured before the application of the plaster; for upon the falling off of the dried cuticle the size is found to have diminished sensibly. In this disease no preparation of iodine is comparable with the binodide of mercury. It performs in one month what the other forms will scarcely do in three or four. I have treated goitres of enormous size with this medicine, and at the first application all the threatenings of suffocation or apoplexy (when they existed) ceased. Soft or so called lymphatic tumours of the thyroid body can be entirely cured, whatever is their size. Those which are indurated, as well as endemic goitres, are harder to cure than those which are soft, and those which occur sporadically." *

Condylomata about the anus and perineum, or even within the rectum and vagina, are cured by this ointment; and unless they are exceedingly extensive and indurated, a single application, although very painful, combined with the internal use of iodine, has been found sufficient. The ioduretted syrup of iron was not found as useful as was expected, for children always refused to take it after a few doses. Iodammonium was administered in cases where nitrogen was thought to be deficient in the urine, in scrofulous subjects; but "every practical physician knows that the signs which are founded upon chemical investigations are extremely uncertain, whilst the human system is something besides a chemical labora-

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* In Styria, about 100 miles south-west of Vienna, cases of goitre and cretinism exist to a frightful extent in the population among the hills: bodily deformity and idiotcy with or without bronchocele, are as prevalent, and to as extreme a degree as in Switzerland itself.—Rev.

tory." Lastly, the mineral waters containing preparations of iodine are not unfrequent, existing, as the author remarks, almost in every place where salt is found. Warmth also is, however, required, and the most powerful of all is at Lippich, in Slavonia, containing at a temperature of 140° a grain of iodide of sodium in every pound of water. The cures performed by this water in scrofula, gout, and syphilis are almost incredible.

Instead of giving us the usual history of syphilis and the progress of the disease, our author, in his chapter entitled "The Pathology of Syphilis," lays down what he calls "the articles of his belief," fourteen in number, as the readiest plan of letting us know his ideas. It may be interesting to know what his opinions are upon some of the still debated questions, and therefore we will make a brief abstract of them before we follow him in his practical views.

Dr. M. believes in the justice of the ordinary division into primary and secondary syphilis, and also that the former may remain for a long time a merely local disorder: that of one hundred ulcers in the genital organs, ten at most are true venereal ulcerations: that we possess no characteristic and certain sign of chancre, and that a continued close observation of the course of the complaint can alone decide the question: that the real Hunterian chancre now scarcely exists (owing to an improved mode of treatment,) and that the hard base and thickened edge were formerly almost entirely due to the irritating plan of treatment: that the slow course is an essential particular of the true venereal sore: that there are local syphilitic ulcers possessing an exanthematous and volatile character, which in a few days produce red spots upon the skin, and superficial ulceration of the mucous membrane of the throat, without there being as yet any general lues;—this form readily causes iritis;—if the disease is not at once cured, in the shortest time lues follows, the symptoms of which extend over the whole system: that the inoculation is but an uncertain method of diagnosis, as to its results, and that it increases the danger of constitutional infection: that gonorrhea and syphilis are not different forms of the same disease, although on the other hand they may both be followed by secondary symptoms: that syphilis may be inherited from the father or mother, but more easily from the latter: from a syphilitic mother specific ulceration in various parts, tendency to caries and hydrocephalus are derived; from a mother infected with gonorrhea, glandular swellings, which obstinately resist the usual antiscrofulous remedies: that gonorrhea is entirely distinct from the leucorrhea of chlorotic and scrofulous subjects, because it is always the same, and that when it appears the slightest, there is most frequently metastasis to the testicle or the eye, resembling an exanthematous disease, which, if it is not well developed upon the skin, is liable to attack internal organs; that every case of gonorrhea will get well of itself without any evil consequences; but when suddenly suppressed will produce secondary disease: that one of the abovementioned transient exanthematous chancres cures and entirely disappears after a short time: the patient has, however, incurred the infection of general lues, which becomes developed in his system, and upon his marrying, or indulging in sexual intercourse, excretions are discovered which become true chancres: that this is a matter of great importance, as an innocent person may be accused of being infected with syphilis: lastly, that true chancres may exist within the urethra.

The part of the work on the treatment of these disorders begins with the treatment of gonorrhea, "a disease, like *other* exanthemata, taking its origin from some infection, producing a secretion of matter resembling that from which it originated, and which is of itself curable after this matter has been excreted." There is nothing in this chapter which need detain us, for no new plan of treatment is laid down, nor does he recommend the administration of iodine in any form. The physician should point out to the patient the danger of the secondary diseases which arise if the normal course of this complaint is disturbed. He alludes here to the suppression of the discharge, and allows five or six weeks as the time necessary for the cure. "I consider myself bound in conscience, out of humanity, to warn my colleagues against the use of cubebs and its preparations." He, however, gives the balsam of copaiba after the inflammatory stage has passed.

In the treatment of *strictures of the urethra* he condemns dilatation as prejudicial, and cauterization as perfectly inadmissible. "Strictures and thickening of the coats of the bladder are the same disease, although they produce different symptoms; absorption alone is able to remove these deposits." Besides the ordinary use of bougies for pressure, he applies the ointment of the iodide of mercury to the perineum. In cases of *retention of urine from* stricture he gives two plans, which are always to be had recourse to previous to the performance of the operation of paracentesis vesicæ. The first, which seems to us somewhat hazardous, is the administration of an emetic to produce vomiting; a case, however, is related to illustrate the beneficial action of this remedy. The second plan is a mechanical mode. A smooth and large straight catheter, with an eye at the end, is to be introduced down to the stricture, against which it is to be firmly pressed, and the prepuce is to be held by an assistant against the instrument, so as to prevent the entrance of any air: the surgeon then, by means of a large syringe, which can be accurately adapted to the top of the catheter, injects with a moderate degree of force an ounce of oil, which gradually finds its way through the strictured part and into the bladder. As soon as it reaches the bladder a violent effect to expel the urine is made; when the surgeon draws back the piston of the syringe the oil flows back and is followed by three to five ounces of urine. This is sufficient to relieve the patient for the time, and the operation may be repeated after the lapse of half an hour. He adds, that after the use of this plan for a few days, the urine begins to flow of itself, rendering the application more seldom necessary. The syringe should be capable of containing six ounces.

*Treatment of primary syphilis.* In the treatment of primary sores there is little in this volume requiring remark. His applications to primary sores are only warm bathing and remedies of that nature; with careful attention to the temperature of the body, without any alteration as to diet. In this way he allows three to four weeks for the cure of an ordinary sore. In cachectic or scrofulous subjects, where the powers of the system are scarcely able to perform the excretion of the matter, and the formation of the hard base of the chancre, (which he looks upon as a kind of natural preservative or dam, against the occurrence of secondary symptoms,) some medicine is required to increase the powers without increasing the action of the absorbent vessels, and this is only to be done by the iodide of potassium in large doses.

*Treatment of secondary syphilis by preparations of iodine.* The objects of the treatment are to oppose the destructive agency of the poison upon the function of nutrition, and to excite such activity in the skin as will be sufficient to produce a critical exanthematous eruption; for, he says, at the present day the disease is not as it used to be, an acute exanthema, accompanied with fever, capable of being propagated without sexual intercourse, in the ordinary way of contagious disorders. The only means of performing the cure is by iodine.

*Mercury* often cures both the primary and secondary symptoms, but it occasionally fails. The author exhibits the evils and disadvantages of the mercurial cure under eight heads. The chief of these are—the objections and want of attention of the patient; the difficulty of accurately controlling the action of the medicine; the uncertainty of the period at which its specific effects (salivation) show themselves; the depressing influence of mercury which prevents the patient from continuing sufficiently long with the medicine; the diseases actually brought on by mercury; and its leaving the patient in a weakened and cachectic state.

The advantages of the *iodine cure* are, on the contrary, the following: iodine acts at once on the disease without involving the system; instead of depressing the patient it stimulates his appetite and improves his digestive powers; it produces the wished for eruption of the skin which is critical, indicative of saturation by the remedy and of a perfect cure; salivation occurs from iodine only where mercury has been previously exhibited; the cure is complete in three or four weeks; no relapse takes place after the rash has once appeared; and finally, this remedy may be used in very young, weak, and cachectic individuals.

*Description of a methodical cure by iodine.* A dose of aperient medicine commences the treatment, and the rest consists of the following parts—viz., the regular use of the iodide of potassium and of baths; the local application of a solution of iodine when local affections are present requiring treatment, and a suitable attention to diet and regimen. The iodide is to be administered in doses sufficient to give a powerful impulse to the functions of the nutritive organs, without increasing the activity of the absorbent system, and this can be done by large doses. A patient 15 years of age may begin with a scruple.

℞ Potass. Iodidi. ℈j.
Aquæ destill. vel aq. ceras. nigr. ℥iij.

This quantity to be taken every day before dinner, divided into three doses. The first third early in the morning, and the last about two hours before dinner. After a few days ten grains may be added, and so on up to a drachm, beyond which it is seldom necessary to proceed.

The baths, which appear to be quite as necessary a part of the treatment, are made of iodine, common salt, &c., sufficient quantity of the iodide of potassium to render the iodine soluble. Before Dr. Moj'sisovics commenced the use of the baths, the time occupied in the cure was twice as long. The heat is to be moderate, and they are not to be used in the patient's bedroom, in consequence of the volatilization of some of the iodine rendering the atmosphere unpleasant and irritating to the mucous membrane of the lungs; for the same reason the bath is to be covered with a large cloth, fastened round the patient's neck before the ingredients are added to the water. The strength at first is to be one drachm of iodine, and one and a half of iodide of potassium, with two to three pounds of common salt. The patient should spend an hour in the bath, in which during a part of the time he experiences an almost unbearable burning and itching; he should then return to bed, and remain until the perspiration ceases, when he may get up. In three days the iodine is to be increased to a drachm and a half, and after seven days to two drachms of iodine, and three of iodide of potassium. After the patient is accustomed to the bath some little time, the burning sensation ceases, and this indicates that the solution should be increased. About the tenth or eleventh day a slight febrile action comes on, with thirst and disturbed sleep, and irritation of the skin and a partial scarlet eruption appears. At the fourteenth day it is generally entirely developed, being most clearly seen in the morning. Desquamation begins on the fifteenth and is complete on the seventeenth. This is a sign of a perfect cure. In individuals with thick skins, and of a torpid temperament, the eruption does not appear until the seventeenth day, and the desquamation in the twenty-first. The patient at last may remain an hour and a half in the bath. In one or two corpulent subjects the author observed an eruption resembling herpes zoster, which was exceedingly painful. The hands become discoloured after the fifth and sixth bath, and remain so until the exfoliation of the cuticle.

For a local application a similar solution is used :

℞ Iodin. gr. x.
Iodid. Potass. ℈j.
Aquæ, lb.j. M.

This may be applied to primary and other sores, and may be drawn up the nostrils every two hours in ozæna, and used as a gargle in ulceration of the throat.

The diet requires attention also, for, as Dr. Moj'sisovics observes, in order to try his plan of treatment, it is but just to attend to even the most minute direction. Amylaceous food is not to be taken ; the patient may eat meat and green vegetables.

Iodine is taken into the circulation very quickly. Traces of the iodide of potassium have been found in the urine two hours after the dose of 6⅓ grains had been given, and it was even discovered in the secretion of the ceruminous glands of the external auditory canal. Except for a short time daily during the summer, when there is no wind, the patient should remain in a warm room whilst he is undergoing this treatment.

The last part of the work is composed of twelve cases of primary and secondary syphilitic disease treated on this plan, and according to these the result certainly is most satisfactory. There are also a few cases interspersed in the body of the work, to illustrate particular points of which the author was writing.

If the treatment is as certain and successful as the author declares it to be in his interesting little volume, it will of course be welcome to all practitioners, and its merits will soon be acknowledged. The only practical difficulty is the objection which most patients in this country have to remain so long at home giving up their ordinary occupations, and consider themselves invalids, whilst undergoing treatment for secondary syphilis. In hospital practice there can be no difficulty in putting this mode of treatment in force, and we trust we shall soon hear that this has been done.

## Art. XII.

*The Principles of Surgery.* By James Miller, f.r.s.e., Professor of Surgery in the University of Edinburgh, Surgeon to the Royal Infirmary, &c. &c.—*Edinburgh*, 1844. 8vo, pp. 716.

It would be extremely difficult, indeed almost impossible, to give a satisfactory review of such a book as Mr. Miller's in a Journal conducted on the plan that ours is. Mr. Miller's work purports to be an epitome of the entire body of doctrine on which the whole of the modern practice of surgery is based, and to attempt to analyse it in detail would therefore involve a commentary on every important subject comprised within the term "Principles of Surgery;" but such a commentary would occupy not a portion of one number, but several consecutive numbers of our Journal. We might, it is true, set forth our author's table of contents, and enumerate the several subjects treated of in the subsections of each chapter, but this would be to offer to our readers the dry bones without the flesh, to tell that Mr. Miller had written on such and such subjects, without giving any information as to what he had written about them. It might seem open to us to specify whatever new views are contained in the work; but Mr. Miller does not profess to teach novelties; his object has been to give a condensed account of the most generally admitted doctrines; to use his own words, "a concise Exposition of the Science of Modern Surgery." Every chapter of the work indeed would afford ample subject for an article in this Journal, and as occasion arises we shall not fail to refer to Mr. Miller's views, so far as may be necessary when separately discussing any of the numerous subjects collectively treated of in his volume. In our opinion this is the only way in which a systematic work professing to embrace the entire groundwork of an extensive department of science can be profitably dealt with by the reviewer; and we shall consequently, for the present, content ourselves with expressing our opinion of the manner in which Mr. Miller has executed his arduous task, and extracting a few passages which may, perhaps, though imperfectly, enable our readers to form some estimate of how far the judgment we have formed of the work is well founded, or the reverse.

We have no hesitation in pronouncing a decidedly favorable verdict on Mr. Miller's book. We owe him indeed no small thanks for the mere conception of the plan of devoting his work to the principles of surgery. The tendency of surgery has been too long decidedly mechanical, a striving after minute modifications of methods of operating and peddling contrivances in surgical apparatus, rather than the profound study of the principles of surgery, without a knowledge of which the most dexterously performed operation is liable to fail. Of late years there has, doubtless, been a wholesome reaction in this respect—a reaction commenced, and as yet chiefly furthered by British surgeons; and we deem it a satisfactory evidence of this favorable tendency in the surgery of the day that Mr. Miller, who, we believe, is still young, has preferred writing on the principles of surgical science—those principles which alone can make surgery a science—to concocting a book on the more popular and showy, but after all mechanical departments, which it is even yet rather too much the fashion to attach rather an undue importance to.

As an example of the value of a correct appreciation of the principles of surgery in the treatment of disease, we may refer to the recent important improvement in the treatment of popliteal aneurism, by substituting compression of the femoral artery for ligature of that vessel. We take this example, not as the best by any means that we could select, but because it relates to one of the very few subjects admitting of anything like novelty contained in Mr. Miller's work; and consequently the following extract, being Mr. Miller's section on the cure of aneurism by "*pressure*, without incision," besides a fair example of Mr. Miller's style and manner of handling his subject, will in itself prove interesting to most and instructive to some of our readers.

"In ancient times, the surgeon who was afraid to cut into the aneurism, and take his chance of arresting the flow of blood, had recourse to direct and energetic compression of the part, with the hope of cure. The name of Guattani is chiefly associated with the practice. Local sloughing, suppuration, or ulceration, with severe constitutional disturbance, yet with an unclosed artery and aneurism, resulted more frequently than the cure. Subsequently to the establishment of the Hunterian operation, its principle was extended to the mode of treatment by pressure; this being applied, not to the tumour itself, nor in its immediate vicinity, but at some distance, at a part such as would be selected for Hunterian deligation, in the hope of the arterial tissue there being in a sound condition. This method was made trial of by Dubois, A. Cooper, Blizard, &c. but with no satisfactory issue. The pressure was continued and severe, their object being to keep the tube close and impervious at that point, and by plastic deposit to obtain its complete consolidation. The result was, the occurrence of great pain and constitutional disturbance; followed by inflammation, ulceration, or sloughing of the compressed parts; exposing, or perhaps including, the vessel. The practice found no favour with the general profession. Lately, however, the treatment by pressure has been revived, in a more scientific form, and with a better success; conducted rather as if itself was not the agent of cure, but only the means whereby the spontaneous cure may be originated and favoured. The pressure is made at a Hunterian site, as before, but it is neither constant nor severe. By means of a compressor, such as invented by Crompton and Signorini, or any other suitable apparatus, a moderate degree of pressure is applied to the vessel at a point where its coats may be expected to be sound, and consequently not prone to ulcerate from slight causes. This is maintained so long as it can be conveniently borne by the patient, but no longer. So soon as the uneasy sensations become at all intense, with swelling and numbness of the limb, and throbbing in the part, the pressure is either slackened or altogether removed. After a time, the parts having recovered, it is reapplied; again it is removed; and thus, by its occasional and modified use, the disasters formerly attendant on the treatment by pressure may be altogether avoided. At the same time, the circulation in and near the aneurism is decidedly moderated, so as to favour solidification. The tumour is not only arrested in its growth, but begins to diminish; its pulsation is less, and its dimensions contract; it feels harder and less compressible; ultimately, pulsation wholly disappears, and induration is complete; absorption then advances, and the obliterative cure is obtained, with or without a pervious condition of the vessel. But the pressure is not trusted to alone. The same preparatory treatment is necessary as before the operation by ligature; and throughout the whole period of treatment absolute repose with recumbency is maintained, as well as antiphlogistic regimen, and all other means likely to favour the desired beneficial change. Also, the limb below the compressed point must be uniformly and equally supported by bandaging, lest passive congestion and œdema supervene; and this pressure may from time to time be somewhat increased on that part of the limb which includes the aneurismal tumour. Let no haste be indulged in. The process is necessarily one of weeks, not of days; gradual, not sudden; interrupted, not continuously progressive. The pressure requires to be neither great nor constant, for we do not desire obliteration, even temporary, of the arterial tube there; it is sufficient to moderate, not essential to obstruct, the flow. And only by a constant remembrance that such are the principles of cure by this means, will the pressure be so leisurely and prudently conducted, as to ensure avoidance of the disaster to which compression is liable. The advantage of such a mode of treatment, when properly conducted, is immunity from ulceration and hemorrhage; the disadvantages are, the protracted period, and ultimate uncertainty, of cure. If improperly conducted, it is in every point of view inferior to the ligature; less certain of cure, and even more certain of danger at the selected part of the vessel. Even skilfully managed, it is obviously less capable of general application; there being not a few systems possessed of an intolerance of pressure, even when modified and occasional. The improved revival, however, is as yet but in its infancy. In the hands of Liston, Cusack, Hutton, and others, it has already succeeded. But a wider experience is still required ere surgical opinion can be at rest upon the question. The leading points of the system, it may be again stated, are:—the pressure is at some distance from the tumour, moderate, and only occasional; it is not necessary, and it is not our object, to obliterate the vessel at the compressed point; in other respects the same treatment is followed out, regarding both part and system, as in the favouring of spontaneous cure without any surgical interference." (pp. 457-9.)

The foregoing extract contains an accurate statement and a candid and judicious appreciation of the facts known at the time Mr. Miller wrote, but several cases that have occurred since, strengthen the hope that the treatment of popliteal aneurism by compression will become applicable, if not in every case, at all events in most cases. Dr. Cusack communicated to the Surgical Society of Ireland a case, published in the 'Dublin Medical Press' last February, which though apparently a most unfavorable one for treatment by compression, was nevertheless radically cured in a few days by that method. The aneurismal tumour was very large and had given way, so that it communicated with a secondary sac containing perfectly fluid blood so very thinly covered, being in fact almost subcutaneous, that great apprehensions were entertained that it might burst; the tumour moreover was extremely painful, and the patient was at first so intolerant of pressure that it could not be maintained on any one point for many *consecutive minutes.* Under these unpromising circumstances two instruments were employed, one being tightened so as to moderate the current of blood through the femoral artery without completely arresting it, while the other was relaxed; directly the pressure of the former instrument became inconvenient it was loosened, and the other was brought into play. By thus alternating the action of the two instruments, and by shifting their position (as the pressure, moderate though it was, became intolerable at one point) over the entire space between the pubis and the margin of the tumour, pulsation was completely and permanently arrested in the aneurism by the third day. We thus see that Mr. Miller's estimate of the disadvantages of the treatment of popliteal aneurism by compression, though fully justified by the state of our knowledge at the time he wrote, may probably have to be materially modified. Dr. Cusack's case, just referred to was, it must be admitted, a most unfavorable one for treatment by compression, and yet a cure was effected by that method, not more slowly, but very much more rapidly, than could have been accomplished by ligature of the artery. We are also aware of other cases, indeed have witnessed some of them, in which the treatment by compression was attended with an equally satisfactory, though not certainly so prompt a result; but as those cases have not yet been published, we cannot further allude to them. We may just observe, however, that the rule laid down by Mr. Miller, that "the limb below the compressed point must be uniformly and equally supported by bandaging, lest passive congestion and œdema supervene," &c., is by no means generally true, and in some instances may be advantageously deviated from. In Dr. Cusack's case, above noticed, no bandage was applied to the limb; and in another case, not published, which we witnessed, the limb was left unbandaged, not only without inconvenience, but to the great comfort of the patient; in neither case did the pressure produce œdema, which will not indeed commonly occur, if the compressing instrument is, as it should be, so contrived and applied that it shall bear on two opposed surfaces of the limb without constricting too great a portion of its circumference.

A succinct analysis of Mr. Miller's views respecting inflammation, might seem to afford a good opportunity of testing the value of his work, but we find ourselves precluded from adopting this plan by the fact, that he has done us the honour to adopt, almost entirely, the opinions recently put forward in this Journal, and to which he makes due reference. In the more practical parts of the chapter we have noticed a few errors, or rather oversights. Mr. Miller very properly says that "He is a sadly thoughtless and reprehensible practitioner who, in the treatment of inflammation, throws in mercury with a loose hand and a careless eye." (p. 128); but when the student reads a few lines lower down, that when mercury is indicated, "the best form of exhibition is two grains of calomel and half a grain of opium, repeated every hour or every two hours, according to the haste with which we desire to affect the system," we fear he might very likely fall into the error of supposing that this liberal administration of mercury was the rule, instead of being the rare exception, for its use in the treatment of inflammation; that cases do every now and then occur in which such heroic practice is required we do not pretend to deny, but the student should be informed that in the great majority of cases the sixth or eighth part of the quantity of mercury, above mentioned, would suffice. Such, for instance, is the case in one of the very examples adduced by Mr. Miller in the same page, as justifying "much eagerness" in giving mercury; we allude to iritis. Mr. Miller is of course perfectly right in laying it down as a general rule, that venesection should precede the administration of mercury in the treatment of inflammation, but we think he is not quite correct in saying, "should the latter" (mercury,) "go single handed in the contest, it is sure to fail; harm is done instead of good," (p. 129;) for the cases are not unfrequent in which, either from the debility of the patient, the type of disease prevailing, or the advanced period of the disease at which the practitioner is first consulted, venesection is out of the question, and mercury may and must be administered at once without any antecedent depletion. As another example of an oversight we may just mention that Mr. Miller, describing the signs indicating the formation of matter, (p. 184,) omits a local sign, namely, œdema, which is often of the greatest importance in determining the existence of suppuration, especially when deep seated. We can, however, assure our readers, that what we conceive to be errors and omissions are few indeed; and we have adduced those just mentioned, not because of their importance, or from any desire to find fault and pick holes, but as an evidence, that if we could detect a serious error we would not fail to discharge our duty by doing so.

We must find room for Professor Miller's account of the proper treatment of local gangrene, commonly called gangrena senilis; were it only for the temporary interest respecting it, excited by a late medical trial.* All scientific and experienced surgeons will (speaking generally) agree in opinion with Mr. Miller in the propriety of the discriminative treatment, so concisely yet so clearly laid down by him. It is evident from the records of the trial alluded to, that Mr. Liston's views and practice are in strict accordance with the principles laid down by our author; while, in his evidence before the court, he displayed that degree of caution and that hesitation in condemning a mode of treatment *apparently* different, which becomes the liberal and scientific surgeon. In an art so uncertain as ours, in which the proper adaptation of any particular treatment to an individual case, must be almost invariably governed by the peculiar circumstances of that case, it can very rarely happen that any practitioner is justified in stating in a court of justice that a particular treatment was positively good or positively bad, in a case not seen by himself:

"In the chronic gangrene of old people, the *Gangrena senilis*, we may have two distinct forms: death, direct, from mere want of power; or death indirect, weakened power being overcome by inflammatory action. In the former case, cautious general support is expedient, enough to maintain and increase general power; yet cautious to avoid the induction of an inflammatory process, which we know the part to be unable to bear; and the part itself may be covered over with tepid water dressing, or any other bland protective application.

"In the second, or inflammatory form—much the more frequent—our object should be to subdue the local or perverted action, yet without impairing, on the contrary rather adding to, the general power of system. The best local application with this view, is the nitrate of silver, pencilled over the red, painful, and swoln parts, so as merely to blacken, and obtain the simply sedative and antiphlogistic result; covering the part afterwards with a light soft poultice, or water-dressing. The patient should be kept in the recumbent posture, with the part somewhat elevated. The diet must be non-stimulant, otherwise action, already beyond the power of the part to bear, will be further increased; it must yet be not truly antiphlogistic, or starving, otherwise both general and local power, already weak, will be still further impaired, and the existing action, even without increase, rendered more and more destructive. It will consist then, of simple farinaceous food; such as will maintain power, and yet not favour undue vascular action. At the same time the continued use of opiates is highly expedient. Great pain and general irritation attend the progress of the disorder. The former is in part alleviated by the nitrate of silver; both will be much assuaged by opium, which further, according to some, would seem to exert a beneficial tonic effect on the capillaries, thereby tending to increase vital power under circumstances when it is much required. Under such treatment, we expect, and often not in vain, pain, redness, and swelling to cease, as also the advance of the mortification; a healthy line of demarcation is established; the dead parts are thrown off; the patient rallies greatly in his system; and in short recovery is obtained, though not of course without more or less mutilation.

"But such was not the practice, and such were not the results of former times. The practitioner took but a one-sided view of the case; regarding deficient power alone, and overlooking redundant action. His patient was literally crammed with diet of the most rich and stimulant kind; if in the better ranks of life, his table was made to groan daily, as well as himself, under the most sumptuous viands; and yet the generous food seemed only to feed the disease, not the patient. The dusky redness spread more and more, and both part and frame sank under it.

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* Baker v. Lowe. Lancet, Feb. 1845.

The error was at length perceived, and an opposite extreme was gone into. Seeing then nothing but overaction, antiphlogistics were had recourse to, as if the process were of the ordinary sthenic form; disregarding the want of power, which did not fail to increase under the neglect. Dupuytren, for example, trusted to venesection. Now, a middle place is wisely selected; we neither stimulate nor spoliate the system; local action is moderated, while both local and general power is enhanced and maintained; and the result is altogether satisfactory." (pp. 269-70.)

We had marked several other passages in Mr. Miller's work for the purpose of extracting them, but must limit ourselves to the following one on the treatment of the shock that so frequently follows the receipt of an injury, for the mischief that results from ignorance of or inattention to the rules so well laid down by Mr. Miller, is we believe much greater than is perhaps commonly supposed. After distinguishing between mental and corporeal shock, Mr. Miller thus describes the treatment of the latter:

"Two errors—in their nature very much opposed—require to be guarded against; foolish bleeding, and premature stimulation. A patient having received a fall, is probably found unconscious and incapable of motion; the practitioner would seem, in some instances, to have a peculiar aptitude for mistaking such a state for the coma induced by extravasation; a vision of apoplexy with its suitable remedy of venesection, passes on the instant through his mind; his lancet, as it were mechanically, leaves its case, and reaches a vein in the bend of the arm, or the jugular vein, or the temporal artery. No blood may follow the incision; and it is well, for loss of blood—a most powerful agent of depression—is not likely to prove beneficial when depression is already great and dangerous. By and bye, reaction begins to be established; the pulse may be felt and counted, the skin becomes warm, and signs of returning consciousness appear; at this stage, bleeding is not unfrequently practised; still it is premature. Nature now, however, is in a better state of self-defence; but little of the precious fluid escapes, ere syncope again occurs, arresting the flow—a protest and a safeguard against the malapraxis. The time for bleeding is neither before reaction nor during its early progress, but after it has been fully established, and when it threatens to advance to an inflammatory excess . . . . . . In the treatment of the shock of injury then—and more especially when the head is the part injured, early bleeding and immature stimulation are both to be avoided. The injured part receives the mechanical adjustment that is necessary, the patient is laid in bed, or elsewhere, as comfortably as possible; with the head (unless it be the seat of injury) in the first instance rather low, so as to favour return of arterial circulation there. The event is then carefully watched. Reaction may soon occur without further aid from us, and require even active means for its moderation. When it is tardy and there seems to exist no reason why its retardation should be desirable, friction and heat are to be applied to the general surface; and should these fail, stimuli are then cautiously administered by the mouth; beginning with simple fluids, such as hot tea or soup, and gradually ascending in the scale if need be, to brandy and ammonia. The exhibition of these requires care when insensibility is complete; otherwise they may get into the air-passages instead of into the gullet, and suffocate the patient. Also in urgent cases, powerful stimuli—as sinapisms, hot irons, blisters, strong ammonia—may be applied to the surface, with the double object of rousing the spinal system by reflex action, and courting sanguineous circulation towards the part irritated. In the use of such remedies it is to be remembered that sensation is for the time in abeyance; and unless we, as it were, feel for the patient, the applications are apt to be unnecessarily severe; proving very troublesome, and perhaps even dangerous, in their results, after reaction has been established—as by ulceration, sloughing, or extension of superficial inflammation. The ammonia, for example, of a smelling bottle has often been carelessly thrown into the nostrils, producing sad disturbance there . . . . . lives have actually been lost by nasal inflammation, so induced.

"The internal use of stimuli must also be conducted with extreme caution, and desisted from so soon as circulation is restored satisfactorily; otherwise danger by excessive reaction can scarcely be escaped. If inflammatory fever set in, along with local inflammation in the injured part, not only are all stimuli scrupulously withheld, but antiphlogistics are administered as circumstances may demand. If, on the other hand, irritative fever be the result, opium or other narcotics, in guarded doses are to be exhibited. And it is to be borne in mind that when the shock has been severe and protracted, and more especially when it has occurred in a frame previously weak, the sthenic period of reaction is apt to be but short, and the tendency is to gangrene locally, with typhoid seizure of the system; in such cases the more powerful antiphlogistics must be employed sparingly if at all. When the injury has been attended with great loss of blood, reaction is never of the sthenic form, but of the purely nervous kind, formerly described when treating of venesection; for the assuaging of this a full opiate is most effectual. Vomiting usually disappears before the ordinary restoratives, along with the other symptoms of the shock. Should it prove troublesome, as it sometimes does, with hiccup—it may be directly treated by a sinapism to the epigastric region, and small doses of the spiritus ammoniæ aromaticus." (pp. 172-5.)

From the extracts given, the reader will perceive that Mr. Miller's style, although very lively, clear, and energetic, is somewhat peculiar. It reminds us of the late John Bell's. It is a style which only a scholar and a man of talent could write; and yet we have our doubts whether it is not better suited for the lecture-room, than for a grave didactic treatise: wherefore, when Mr. Miller next appears before the profession, as an author, which we trust will be soon, we would recommend him to consider whether he would not do himself and his subject more justice, by restraining his *verve* with a stricter rein, and keeping his eloquence for his class-room. There, we doubt not, it is quite appropriate and must tell. But this is a mere matter of taste, which Mr. Miller may probably think himself as good a judge of as ourselves. It is more to the purpose to say that we cordially approve of his work, and trust it may have the success it so well deserves. It contains a sound body of surgical doctrine, and speaks well for Mr. Miller's scientific attainments. It ought to be read by all young surgeons, and not a few old.

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## ART. XIII.

*The Biographical Dictionary of the Society for the Diffusion of Useful Knowledge.* AA—AZ, Vols. I-IV. Seven Parts.—*London*, 1842-4. 8vo.

WE peruse with peculiar interest and avidity the biography of those whom we have known, esteemed, and loved. Every incident in their lives is fraught with interest. Their habits, and peculiarities, their dispositions, and feelings,—their domestic concerns, and changes of fortune,—their joys and sorrows, have all a special and direct claim upon our sympathies, and are hallowed in our minds by the most tender associations. The biography of those who have occupied a prominent place in the attention and adulation of our times, is fraught with an interest of a different kind. We strive to discover in the events of their lives or the peculiarity of their minds, the secret of their fame and fortunes. To those who tread the same path to fortune or renown the biography of its heroes is especially instructive. They read in each history the habits of study or reflection, the modes of action and the personal qualities which distinguished its subject, and measuring their strength with his, they emulate the same qualities by which he was characterized, and pursue the same course towards an honorable fame.

These are the objects to which special biography is subservient, and the design for which it ought and must be constructed. Far otherwise is it with such a work as that which we have under review.—It can neither render itself subservient to the gratification of private and personal feelings, nor to the study of human nature in the delineation of the varieties and workings of individual minds; nor can it impart those great moral lessons of instruction and encouragement under difficulties, or of emulation of the virtues and labours of the great, which it is the grand design of biography to convey.

There is another aspect in which biography is peculiarly interesting and instructive, namely, as presenting a history of the great events, or scientific discoveries with which the individuals whose lives it records were connected. In this manner the history of a great statesman becomes the history of the political events of his times,—that of a series of emperors becomes the history of their empire. So may the history of a series of scientific men, if arranged with a reference to their respective sciences, and the successive ages in which they lived, become a history of chemistry, or of medicine, or of any other art or science. This end of biography can be but imperfectly, if at all, attained in a biographical dictionary where the lives are arranged without reference either to the time or place at which the individuals flourished, or the qualities or achievements by which they were distinguished. The design of such a work is to put on record the names of all persons whose names deserve to be recorded, whatever the amount of their desert or the nature of the acts or excellencies for which they were celebrated. Their names must be arranged in the most convenient form for reference, without regard either to their comparative merits, the age or country in which they lived; the arts or sciences which they cultivated; or, in fine, the reasons for which their names have been enrolled in the book of fame. The aim of a general biographical dictionary must be to comprise as many names as are worth knowing,—to give a few particulars regarding the period in which the persons lived, their country, the titles of their works, and such references as may enable the individual who consults it to obtain more complete information regarding the persons and their works. It is in short a book of reference, the design of which is to enumerate the leading facts regarding the persons whose names it comprises, and to indicate the sources of further information regarding them.

For convenience, in consulting such a work, the names of the persons included in it are arranged in alphabetical order. This mode of arrangement, while it possesses many obvious advantages, is not without many objections which might be urged against a work the principal or sole design of which must be that of reference. It presupposes that, before the work can be consulted, the name of the individual we wish information concerning, must be known. Now, in nine cases out of ten in which we wish the assistance of such a book of reference, to know the *name* of the individual is the very thing we want; if we know the name, we already possess the means of obtaining such further sources of information regarding him, as such a work as the present can offer. A biographical dictionary may suffice to afford us the means of determining readily the date of an emperor's birth or death, the place where a poet was born, or the titles of all the works of a distinguished author. But the sort of information, most of all required by the student, is of an opposite kind,—it begins with the events, or subjects of inquiry, and ends with the actor or author of them. The questions regarding which he requires the aid of a book of reference are such as these; *who* has written on such a *subject,—who* has written the history of such a period, or country,—*who* has prosecuted investigations in such a branch of science? When he knows the *names*, any library catalogue will in most instances furnish him with the works required, and indicate all the sources of information he stands in need of.

The relation of biography to one of the objects referred to in the preceding remarks is adverted to in the preface of the work before us, and the means of obviating the defect incidental to an alphabetical arrangement of such materials, as far as regards that object, is promised to be provided for.

> "A biographical dictionary," says the accomplished editor, "may be used for other purposes than that of merely referring to it for individual lives. The lives of men who were contemporary and in certain relations to one another, as political personages, teachers of philosophy, and writers generally, or the lives of personages who are in a certain relation of succession to one another, as kings of the same dynasty, may be selected out of the alphabetical order, and so read for the purpose of comparison, or for the purpose of combining the information contained in several lives, that is, for the purpose of historical study. In order to facilitate this use of the dictionary, the last volume will contain tables of kings and other public personages, who are related to one another in the order of succession; and it will also contain certain synchronitic tables, which will exhibit in their relations of time those personages who have had the chief influence on the course of human affairs, and on the progress of knowledge." (Preface, p. vii.)

Such tables will enable the readers to peruse a series of lives in their chronological order, and thus to make the work a means of historical study either in reference to countries or great discoveries. So far it will greatly enhance the value of the work, and will make it in other respects more available as a book of reference. The value of the work would be still more increased if such tables were extended to all the persons whose names are recorded in the Dictionary. Dividing them into different classes according to their rank or profession, or other distinctive characters, and arranging them in chronological order.

If, in addition to such tables, the Society were to publish as a supplement, a *catalogue raisonné* of all the works mentioned in the biographies, they would render a most notable service to literature and science. A few such catalogues we possess, but they are mostly of theological works, or limited to other departments of study, and the best of them are far from being so complete as they might be, besides being so rare or expensive as to place them, in a great measure, beyond the reach of the student. The Dictionary before us promises to be the most elaborate and complete work of the kind ever published. Attached to each biography is a list of the titles of all the works published by the individual, if an author. Such a catalogue therefore might be readily compiled out of the Dictionary itself, after its completion. The catalogue would probably extend to several volumes, and would be divided into different parts according as the works related to theology, law, history, travels, the arts or sciences, poetry or general literature; and these again would necessarily require to be subdivided according to the different departments of each subject to which the works severally referred. Such a catalogue would render the Dictionary in every respect complete as a book of reference, and would, in itself, be a work of unspeakable advantage to every student.

The seven parts of the Dictionary now published comprise all the names under the letter A. The work appears to have been executed with great labour and accuracy. It is chiefly valuable for its completeness,—one of the principal objects undoubtedly in such a work; and certainly the one before us, leaves nothing apparently to be wished for in this respect. The number of names must indeed appear astonishing to most readers. No labour or research seems to have been spared in making the notices of every individual as accurate as possible; and especially, what must render the work peculiarly valuable, in giving such references to the writings of the individual and all the sources of information regarding him as will satisfy all those who consult it for ulterior purposes.

It would be beyond our province, if we were qualified to pass a judgment on the mode in which all the biographies have been written. It appears to us to be peculiarly rich in the historical and theological departments. This may arise from our ignorance of those departments, more particularly the latter; but certainly the number of Aarons and Abrahams is, to our medical eyes, something more than astonishing. Every department, however, seems to be justly and equally dealt with, and the extent of each biography to bear a fair relation to the importance of the individual.

We are certainly entitled to pass our opinion upon the medical biographies, of which a brief survey of a portion may interest our readers, and afford a good sample of the general merits of the work.

There are not less than 250 lives of medical men in the volumes before us; only a few of them, however, have any particular claim upon our attention, or that of the general reader; although, doubtless, they have each their special interest in relation to their respective epochs, or to particular subjects of inquiry.

The first physician occurring in the alphabetical arrangement of the Dictionary is PIETRO DI ABANO, or PETRUS APONO, a professor of medicine, and physician in Padua, in the beginning of the fourteenth century. Like most of the medical writers of that period, he is known to us only as a commentator upon the fathers of medicine, and the physicians of the Arabian schools. His principal work is entitled 'Conciliator Differentiarum Philosophorum et precipue Medicorum;' from which he received the name of *Conciliator*. With many of his contemporaries he partook in a large amount of credulity in relation to astrology and magic, and incredulity in regard to points of religious faith. For these offences he was tried before the Inquisition once, and again, and ultimately died in 1315, while his second trial was going on. Abano was distinguished by a work on Poisons and their Remedies.

Of ABASCANTIUS, the next physician in the Dictionary, all that we know with certainty is, that he invented an antidote against the bite of serpents, referred to several times by Galen.

The next physician we come to, BALDI ANGELO ABBATIO, physician to Francesco Maria II, Duke of Urbino, in the early part of the sixteenth century, is also known to us in connexion with the same subject, by his work 'De Admirandâ Viperæ Naturâ.'

The two next in order are ABDU-L-LATTIF and ABDU-L-MALEK IBN ABHAR ALKENANI. The latter was a Christian physician and professor of medicine at Alexandria, who is said to have embraced Islám about the year 689. The former was a celebrated Arabian physician, historian, and traveller of the twelfth and beginning of the thirteecth centuries, who rejoiced in the names, as given at length, by Wüstenfeld, of *Abú Mohammed Abdu-l-lattif Ben Yusef Ben Mohammed Ben Alí Ben Abí La'd Ibnul-lebad Muwafiku-d-din al-Baghdádi!* He studied at Bagdad, and held professorships at Mosul, Damascus, and Cairo successively. He also obtained much reputation as a practical physician, as well as lecturer, both at those places and at Jerusalem, Aleppo, and in Asia Minor, where he travelled. "Like most of the great Arabic writers, Abdu-l-lattíf appears to have been a very voluminous author. Ibn Abí Ossaybíah has preserved the titles of 166 works written by him, of which nearly one fourth related to medical subjects; but of these only one has been published or translated, the 'Compendium of the History of Egypt.' This is an abridgment, by himself, of a larger work on the same subject, and consists of two parts. The former contains six chapters, treating, 1, of the general character of Egypt; 2, of plants; 3, of animals; 4, of the ancient monuments; 5, of buildings and ships; 6, of the food of the Egyptians. The second part contains three chapters, treating, 1, of the overflowing of the Nile; 2, 3, of the years (A.H. 597, 598), (A.D. 1200, 1201); i. e., the years of the famine." The work is chiefly interesting for the account of this famine, which occurred while he himself was in Egypt. The horrors of it appear to have equalled or exceeded "anything of the kind in ancient or modern times."

> "The famine was occasioned by the Nile not having risen to its usual height the year before, and it extended over the whole of Egypt. Besides the vices and crimes that usually prevail during such calamities, the extent to which human flesh was eaten was almost incredible. Children and grown-up persons were seized and entrapped in all sorts of ways, and the food which was at first eaten from necessity grew at last so palatable, that it was cooked with spices and sauces of various kinds, and considered as a delicacy. The instances of children being murdered and eaten by their own parents were so frequent, that though the crime was punished by burning the offenders alive, it could not be prevented; and the nearest relatives claimed as a right the bodies of their friends, saying that it was fitter they should be eaten by them than by strangers." (Vol. i, part i, p. 77.)

The biography of Abdu-l-lattif contains some further particulars regarding the life and writings of that physician, and ample information concerning the different editions, Arabic, Latin, German, and French, of his great work. Of these the most valuable is a French translation, published in 1810, by De Sacy (Paris, 4to), enriched by critical and explanatory notes, in which he was assisted by the most eminent zoologists and botanists of Paris.

The above sketch of the biography of the first physician occurring in the Dictionary of any celebrity will afford a fair specimen of the mode in which the biographies are generally executed throughout the work. The kind of information communicated is most valuable, and exactly that for which such a work is likely to be consulted, embracing the dates of the individual's life and death, the principal incidents in his history, a notice of the works by which he was known, with a brief summary of their contents and character, and such references as will enable any one to obtain full information regarding the individual, or to consult or furnish himself with his writings.

A very brief notice of SCIPION ABEILLE, a French military surgeon, distinguished by the eccentricity of his works, in which he endeavoured to render anatomy interesting, by combining it with poetry; and of Dr. CLARKE ABEL, the physician, naturalist, and historian of Lord Amherst's embassy to China; is followed by short biographies of DAVID and PATRICK ABERCROMBY, Scottish physicians of the seventeenth and early part of the eighteenth centuries. These contain also ample references to the works of the authors respectively, and to the sources of further information regarding them. The writings of David Abercromby have not yet altogether lost their interest, particularly his treatise 'De Variatione ac Varietate Pulsus,' which is characterized by great acuteness of observation, ingenuity, and that sort of originality which prevents a book from ever becoming too old to be read.

These biographies bring us to our own times in the next physician in the alphabet, JOHN ABERNETHY, the second "glorious John" of our literary history. The sketch of his history, opinions, and talents, and the influence which he exercised on the surgical profession in this country—the critique on his writings, and the estimate of his abilities as a lecturer, are all written with much ability, and, in our opinion, sound judgment. It is followed by a complete list of Mr. Abernethy's writings, extending through an entire column, and comprising also a brief notice of their contents and merits.

Passing over a number of learned physicians of less note, Danish, Jewish, Portuguese, Arabian, Italian, German, and Swedish, we come, at p. 242 of the same volume, to ACHILLINI, professor of medicine at Padua and Bologna in the early part of the sixteenth century, a name which deserves to be ever remembered as that of the earliest to revive the study of anatomy by actual observation and dissection of the human body.

"His anatomical descriptions, though chiefly collected from the writings of Mundinus and the Arabian physicians, yet contain accounts of several things before unknown, as the nerves of the fourth pair, the number of the bones of the tarsus, and the position at which the spinal cord terminates; and exhibits a more accurate knowledge than his predecessors had of many other parts, such as the olfactory nerves, the veins of the arm, &c. He is also commonly said to have discovered the two bones of the ear named malleus and incus; but he does not claim the honour, and there is no evidence to prove more than that they were discovered in his time."

The titles of the philosophical and medical works of Achillini are very fully given in the biography before us.

The last biography we shall notice is that which follows next in order, the biography of J. F. ACKERMANN. It is clear, succinct, and comprehensive, and affords an excellent specimen of the merits and utility of the whole work, as far as it relates to the medical profession. After noticing his birth, education, travels; the professorships which he held at Mainz, Jena, and Heidelberg; the improvements which he effected in the system of medical education, and his death, in 1813,—the following abstract is given of his writings and opinions. These are interesting in relation to the direction which similar inquiries and theories have taken of late years.

"J. F. Ackermann's chief works are those in which he attempts to supplant the current physiological theory of a vital principle, by one in which all the processes of the living body were made to depend on the chemical relations between the organized tissues and oxygen. He supposed 'that the vital movements are nothing but the alternate contractions and dilatations of the organic tissue and the cells which compose the mechanical elements of the organs, and that these movements depend on the slow combustion which goes on between oxygen and the materials, as well fluid as solid, of the organic body. (*Kleineren Schriften*, s. 163.) The first stage of this slow combustion was thought to be effected in respiration, in which the oxygen combined with caloric, so as to form a kind of aura, or *semi-gas*, and being received into the blood, united with certain principles of it, as gelatine, albumen, &c. Rendering the latter solid, as he imagined, it formed the blood-globules, and as it passed along the vessels that convey red blood, oxidised all the tissues with which it came in contact, making them at the same time contract so as to carry on the circulation of the blood. The essence of nutrition was made to consist in the particles of blood impregnated with oxygen-aura (or, as he sometimes calls it, *vital ether*), permeating the walls of the vessels, and becoming solid; and in the refuse particles of the tissues, in which the combustion was completed, assuming the fluid form, and entering the lymphatics. And this chemical action he regarded as the origin of a mechanical force; for as the oxidised parts, when they are made fluid, separate from the cellular tissue (of which all organized substances are composed), the walls of the cells contract, force on the fluid with which they are charged, and are in their turn again dilated, when the particles to replace those that have separated are inserted into them. This constitutes the *automatic irritability;* and through this, by the constant action of the oxygen-aura in the blood upon the walls of the left heart and arteries, the circulation is maintained. The same aura is separated from the blood-vessels of the brain, and stored up in that organ, and employed through the medium of the nerves to produce a more intense and prolonged slow combustion of the carbon from the cells of the muscles, for the production of their contractions, or, as he supposed, their actual condensation.

"It is unnecessary to enter into the details of this hypothesis; and it would hardly have merited any notice, had it not been among the first steps by which later physiologists were slowly brought to acknowledge that the essence of what is called a vital process does not consist in its being utterly different from those observed in dead bodies; but rather, that many of the processes which go on in the living body are only very complex examples of the influence of the same forces which operate in dead matter. Defective and erroneous as Ackermann's physiological system was, yet since he gave to oxygen both the name and the dignity of the 'principle of life,' he set many on the search after the real influence of that element upon the economy, and what was yet more important, he shook the common faith in the less definite but hardly less erroneous systems of his predecessors.

"The following are the titles of Ackermann's chief works, and they will sufficiently indicate the contents of those which do not relate to his hypothesis:— 'Dissertatio de Discrimine Sexuum præter Genitalia.' This is better known in the German translation by Jos. Wenzel, Koblentz, 1788, 12mo.—'De Nervorum Opticorum inter se Nexu,' published in Blumenbach's Bibliotheca Medica, iii, 337.—'Ueber die Kretinen;' Gotha, 8vo, 1790.—'Versuch einer physichen Darstellung der Lebenskrafte organisirter Körper,' Frankfort on the Main, 2 vols. 8vo, 1797-1800.—'Infantis Androgyni Historia et Ichnographia,' folio; Jena, 1805. —'De Humanæ Naturæ Dignitate, accedit de Nervei Systematis Primordiis Prolusio,' 8vo, Heidelberg, 1811. The last is to establish that the heart is the centre of the nervous system, and that the nerves are in the first instance formed from the blood which filters into its walls in the manner already mentioned. Besides these, he wrote several smaller essays, on fever, on typhus, against phrenology, on the thyroid body, &c.; the best of which were translated by C. Hoffmann with the title 'Sammlung der wichtigsten lateinischen Scriften des J. F. Ackermann,' 8vo, Speyer, 1816; and of which an account may be found in the Almanach der Universität Heidelberg auf das Jahr 1813. (The life of Ackermann has been written by F. Molter, in Ersch and Gruber's Allgemeine Encyclopädie.)" (Vol. i, part i, pp. 246-7.)

We might continue this sketch through the whole seven parts of the Dictionary we have now before us,—but it would far exceed the limits of any Review to notice even the names of the medical men comprised in them. A considerable proportion of them are Greek and Arabian physicians. The third volume contains a most complete and elaborate account of the Appolonians.

We might be tempted to dwell on a few at least of the names which are presented to us—Æsculapius, Alcmæon, Albinus, Alberti, Aldrovandus, Avenzoar, Avicenna, the Armstrongs, Adams, Arnaud, Asellius, Autenreith, the Greek and Arabic physicians and others, but *cui bono?* The object of such a work as this is not to present its readers with the results of antiquarian lore or original research regarding the particulars of the lives of those whose history it briefly records, or to present to us new facts regarding them. Each individual biography does not, therefore, present matter for detailed criticism or review. We conceive that we have done justice to our readers and to the work by stating the plan on which it is constructed, by pointing out the objects which it may subserve, by showing how far these have been kept in view in the specimen before us, and by giving such samples as may enable every one to judge of the extent, ability, learning, and general utility of the work. We might have selected the lives out of the several volumes and viewed them in chronological order—in relation to the progress of medicine,—but such a survey would have been necessarily imperfect from its containing the lives only of a limited number coming under the letter A and would in itself have been subverting, at, great trouble to ourselves, the plan and arrangement of the work, for ulterior purposes.

The very learned editor of this great work is Mr. Long; and among his principal contributors in the class of medical lives are Dr. Greenhill and Mr. Paget. We recommend the work to our readers as one altogether unrivalled in the comprehensiveness of its objects, the originality and completeness of its materials, the fidelity and trustworthiness of its statements, and the general excellence of its execution.

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## ART. XIV.

*Ueber ossificirende Schwämme oder Osteoid-geschwulste.* Von Joh. Müller: *gelesen in der Hufelandschen Med.-chirurg. Gesellschaft am* 1 *Sept.* 1843. *Müller's Archiv für Physiologie*, Heft V, 1843.

*On Ossifying Fungous Growths or Osteoid Tumours.* By J. Müller. *Read at the Hufeland Medico-chirurgical Society on the* 1*st of Sept.* 1843. *In Müller's Archives for Physiology, &c.* Part V, 1843. 8vo, pp. 56.

We have thought it best to treat this paper as a book, not only because of its interest and importance, but because it is too long to be put in the company of "extracts from journals," and forms a kind of appendix to the learned author's work on Cancer and other Morbid Growths, which was reviewed in our Tenth Volume. In that work he made passing mention of the "osteoid tumour of the bones which is a growth composed entirely of osseous substance," [*at page* 236]; but knowing little about it he prudently said less. The object of his present paper is to give a further account of this kind of tumours, which he has diligently continued to investigate ever since the publication of his work; and though his task is not completely done, yet it is well done, and he has supplied far more information upon this subject than could possibly be collected from all that has hitherto been published.

> "The name of osteoid," he says, "is limited to designate the malignant tumours, leading to the ruin of the organism, which consist for the most part of osseous substance, and occur secondarily, not in the bones alone, but in the soft parts . . . . . . The term is well suited, because it indicates that these formations do not consist of osseous substance alone, but that there is in them another part unossified but capable of ossification." (p. 400.)

To render his description more intelligible, Müller has given reference to several plates of what he regards as osteoid tumours published under various names in former works; and, as our readers may be able to turn to some of these, we have copied the references in a note,* and add, that among the many specimens of the disease in the Hunterian Museum there is an admirable series taken from the patient of whose "ossified lung" Dr. Baillie has given a plate in his Illustrations of Morbid Anatomy. (Fasc. ii. Pl. vi, fig. 2.)

The anatomical description of the tumour is thus briefly given.

> "1. The osteoids are irregularly knobbed (höckerige) tumours, which develop themselves sometimes slowly in the course of some years, and sometimes rapidly, growing, for the most part, first on bones and from their surface, attaining often to an enormous size, and consisting chiefly of osseous substance in the interspaces of which there is an unossified formative part, of the firmness of fibro-cartilage, such as also usually covers the surface of the osseous structure. 2. The condition of this osseous substance is sometimes very porous, and brittle, and split up on the surface into heaps of innumerable lamellæ and fibres; sometimes, on the contrary, it is firmer and more like healthy osseous tissue. The outer part of the tumour never forms a smooth rounded shell about the softer part, such as is found in enchondroma; neither is the bone ever distended into a sac. The minute structure of the osseous substance is like that of all bones. 3. The unossified part of the tumour is a grayish-white and usually firm substance, traversed by vessels knobbed on the surface, which will not tear, and has no similarity with the substance of medullary fungus. Under the microscope it appears as an indistinctly fibrous, dense network, with very small interspaces and here and there scattered primitive cells, or nuclei as remains of cells. It is in every respect similar to the animal basis of the already ossified part, and thus is prepared for ossification. It is distinguished from cartilage as well by its structure as by its chemical condition. On boiling it yields gelatine, and no chondrine. 4. These tumours result from a tendency to a morbid increasing and destructive formation of bone, which usually falls at first on one bone, but afterwards extends over other parts of the osseous system, and (which is of essential importance) attacks also other parts besides bones, so that before or after the amputation of the affected limb, osteoids completely independent of the bones of the skeleton may form in the soft parts, for instance, in the cellular tissue, the serous sacs, the lungs, lymphatic glands, or the interior of the large vessels. 5. The consecutive osteoids may appear in the looser, porous, lamellar form, as well as in that of the most

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* Augustin, De Spina ventosa ossium, Halæ, 1797; Tab. iv.—J. P. Weidmann, Annotatio de Steatomatibus, Mazuntiæ, 1817; Tab. v.— Howship, Medico-Chirurgical Transactions, vol. viii, Tab. iii, figs. 1 and 2.—Haenel, Diss. de Spina ventosa, Lips. 1823. —Cooper and Travers, Surgical Essays Tab. ix, figs. 5, 6.—Cruveilhier, Anatomie pathologique, livr. 34, pl. iv.— Cheselden, Osteography, Tab. 42, pl. ii.—Sandifort, Museum anatomicum, 184, vol. iv, Tab. 54.

compact and hardest bone; so that sometimes very firm osteoids of other parts follow primary looser osteoids on the bones, or, in one and the same body some parts develop the loosest, others the firmest osteoids." (pp. 403-4.)

In support of this description, nine cases of the disease, more or less accurately observed both before and after death, are detailed; of which three were hitherto unpublished, and the six others are taken from the works cited below.[*] References are also given to some other cases, probably but not certainly to be proved, of the same nature. But of these cases we shall make no abstract; for they are not related in a practical or diagnostic view, the symptoms observed are not materially different from those of other malignant diseases of bone, and the results of the examinations after death are embodied in the extract already made. Taken together they have suggested to the author these following remarks on the nature of the disease.

These tumours, he believes, devolop themselves in the first instance in and from the periosteum. In some cases the limit between the new growth and the bone is distinct; and in one, at the margin of the tumour, the periosteum could be traced from the adjacent bone going over it, and then loosened and split up in bundles, which were permeated by the new substance. Besides, like periosteum, the unossified part of the tumour yields gelatine, and not chondrine, as that of the cartilaginous tumour does. But although the tumour may thus, at least usually, commence at the periosteum, it does not in its growth limit itself to it or to similar fibrous tissues, but may penetrate among the adjacent muscles, wasting them, destroying their tissue and even assimilating it. The bones themselves also may in the progress of the disease be materially affected: but herein Müller's account is very imperfect.

The production of these tumours presupposes a certain general disposition to a bone-forming vegetative irritation (!); developed in some cases in consequence of external injury, and capable, "by transplantation of the conditions of the particles of the tissue," of passing from the bone first affected to others and, at last, to soft parts. Thus the whole nutritive functions suffer and the patient if not destroyed by the local effects of the tumour dies exhausted.

In their general character these growths are so far like cancers, that Müller suggests the question whether they might not be regarded as a form of cancer and called *carcinoma osteoides.* Only, in two circumstances they differ, namely, that they rarely if ever soften, and that "the exchange of osteoids as equivalents with other cancers," (osteoids appearing after removal of carcinoma of the breast, or carcinoma following the removal of osteoid tumours,) is not yet sufficiently established. A case is related, however, in which there was a combination of the formation of bone and of soft cancer, numerous cystic medullary tumours being formed with bone in various proportions within them, either in the walls of their cells or pervading their substance.

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[*] Observatio H. Laubii, Spina ventosa femoris sinistri, vomicæ pulmonum duræ. Acta med. phys. nat. cur. vol. i, 1727, p. 318.—Cheston, in Philosophical Transactions, 1780, vol. 70.—Catalogue of the Hunterian Museum, 1830, part i, Nos. 512, 532, 533, and part ii, Nos. 461, 462; and Baillie's Morbid Anatomy, as already quoted.—Ph. v. Walther, Ueber Verhartung, Skirrhus, Krebs, &c. in his Journal, B. v, p. 290.—Catalogue of the Museum of St. Bartholomew's Hospital, Ser. i, No. 108.—Philosophical Transactions 1740, p. 616.

In a kind of appendix to his Paper, Müller endeavours to give some account of what were really the diseases which writers have included under the vague, general expressions "spina ventosa," "osteosteatoma," &c. and then, after no brilliant success in this attempt, points out the diagnosis (post-mortem) between the osteoid tumour and those with which it may be confounded, namely, the enchondroma or cartilaginous tumour, non-malignant osteo-sarcoma, osteo-phytes, fibrous or dermoid tumour, medullary tumour of bone, and the osteo-cystoid or cystic tumour of bone. But on this part, although some few good observations are scattered, there is nothing tangible enough for our purpose, except the following interesting account of a case of "telangiectasie," erectile tumour, or aneurism by anastomosis, in which the disease assumed some of the characters of the malignant tumours.

> "The same relation which we observe between the innocent sarcoma and the medullary sarcoma, and between the innocent, often ossifying desmoid tumour and the osteoid, may be observed between the innocent telangiectasis and a cancerous incurable form of this disease. It is well known that telangiectasis is, in general, an innocent disease. But a case has occurred to me which presented the complete structure of telangiectasis with the distinct malignant character, and has induced me, with some other extant analogous observations to consider a carcinoma telangiectodes s. cirsoides, as well founded. The case is that of a woman of cachectic habit, whose arm was amputated in consequence of a deep-seated tumour between the muscles and in the muscles themselves of the forearm, which were softened and in parts infiltrated by a yellowish brown structureless substance. The tumour consisted almost entirely of very considerable dilatations of softened blood-vessels and extravasations of blood. . . . . . . . . Half a year afterwards Dr. Reich brought me some new formations which had been found in the examination after death of the same person, in her abdomen. They were large masses consisting of branches of dilatations of blood-vessels as large as crow-quills from the omentum, and similar degenerations from some other organs of the abdomen; and all were completely filled with blood. . . . . The case is a parallel of one published by P. H. v. Walther.* In this, a young man who had two nævi on the leg which were removed in consequence of their increase, died two years and a half afterwards of sudden and uncontrollable hæmoptysis; and after death, knots were found in his lungs which consisted for the most part of dilated blood-vessels."

Two probably similar cases are referred to: one by Froriep in the 'Encyclopädisches Wörterbuch,' Bd. xiii, in which there were numerous tumours in the uterus, consisting chiefly of dilated blood-vessels, with proportionally small quantities of medullary substance, and in the lungs numerous reddish brown knots. The other case is that delineated by Cruveilhier in the twenty-third Livraison of his 'Anatomie Pathologique,' as an instance of numerous erectile tumours. But when these cases are quoted as examples of erectile tumours or telangiectasis multiplying themselves after the fashion of cancers, we must ask for further evidence, because many tumours (e. g. fatty and cartilaginous tumours) are produced in considerable number in the same person without having any other character in common with the malignant class, and because it is not proved that in the first two cases the tumours found in internal organs after death had not existed in them as nævi from birth. Such nævi are not very uncommon; nor would their presence be indicated, perhaps, till they began to enlarge as other nævi do, one knows not wherefore.

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* Graefe u. Walther's Journal, Bd. v, p. 261, and V. Walther's Abhandlung über Verharting, Skirrhus, &c. Beob. xv.

## ART. XV.

### *Memoir on the Sex of the Child as a Cause of Difficulty and Danger in Human Parturition.* By J. Y. SIMPSON, M.D. (*Reprinted from the Edinburgh Medical and Surgical Journal for Oct.* 1844.) pp. 55.

IT is a well known fact that the larger proportion of still-born children are males; and another equally well substantiated, which was first mentioned by the late Dr. J. Clarke, is that the dimensions of the head, in the male fetus, are, on the average, considerably greater than in the female. These two facts form the groundwork of Dr. Simpson's essay, in which he endeavours to prove, "That the sex of the child has a very marked and demonstrable influence upon the difficulties and dangers of human parturition, in reference to the fate both of the mother and of the infant."

The elaborate tables contained in Dr. Collins's 'Treatise on Midwifery,' furnish Dr. Simpson with the data whence he deduces the following propositions:

1st. That the dangers and difficulties of parturition are greater to the mother in male than in female births.

2d. That the dangers and accidents from parturition and its results are greater to the child in male than in female births.

3d. That for the very marked difference between the difficulties and perils both to the child and the mother in male from that which exists in female births, there is no other traceable cause in the mechanism of parturition, except the larger size of the head of the male child.

His first proposition is established by showing, that in labours presenting morbid complications and difficulties, the child is much oftener male than female; and further, that the larger number of women who die of parturition, or its immediate consequences, have given birth to male children.

The former of these facts is well exhibited in the following table.

| " Nature of complication. | Total cases. | No. of Male children. | No. of Female children. | Proportion of Males to Females, as |
|---|---|---|---|---|
| Tedious labours . | 109 | 65 | 54 | 148 to 100 |
| Convulsions . . | 28 | 17 | 11 | 153 ,, |
| Puerperal fever . | 88 | 54 | 34 | 161 , |
| Rupture of uterus . | 34 | 23 | 11 | 207 |
| Post-partum hemorrhage | 44 | 31 | 13 | 240 |
| Forceps cases . | 24 | 16 | 8 | 200 ,, |
| Crotchet cases . | 74 | 50 | 24 | 208 ,, |
| Total . . | 401 | 256 | 155 | 165 to 100" |

(p. 7.)

The results afforded by this and by the rest of the tables require a slight correction, which consists in deducting 6 per cent. from the column of male children, that being the excess of male over female births in the Dublin Lying-in Hospital.

The number of deaths of mothers is too small perhaps to warrant any very positive conclusions; though when we find that in 105 instances the women had given birth to male children, and in 49 only to female, the difference certainly appears too considerable to be the result merely of accident.

A very striking series of facts is adduced by Dr. Simpson in support of his second proposition. During Dr. Collins's superintendence of the Dublin Lying-in Hospital, 1121 children were still-born; of whom 614 were males, 507 females, or the males were to the females in the proportion of 122 to 100. It might indeed be thought that this disparity is in part owing to a larger number of male than of female children dying before the commencement of labour. This, however, does not appear to be the case, since of the 527 children who were putrid before birth, 257 were males, and 270 females. A calculation founded on the remaining 594 children gives, as the result, 357 males to 237 females: or, in other words, the number of male children who died during the actual process of parturition was to that of females as 151 to 100.

The evidence adduced in proof of the assertion, that, of children born alive, more males than females suffer from the morbid states and injuries resulting from parturition is too meagre to be of much value. Dr. Simpson's next statement is to the effect that more male than female children die in the earliest periods of infancy, and that this disproportion between the mortality of the two sexes gradually diminishes from birth onward. This fact was first noticed by M. Quetelet, in his 'Recherches sur la Reproduction et la Mortalité de l'Homme;' and, according to him, "the ratio of deaths of the sexes during the first two months after birth is as 4 to 3; during the third, fourth, and fifth months, as 5 to 4; and after the eighth or tenth month, scarcely any difference exists. The table Dr. Simpson has compiled from Dr. Collins's work shows that 80 males and 59 females died during the first week, or that the proportion of male to female deaths was 136 to 100. The mortality tables of the Registrar-General yield nearly the same results for the first month of existence, since they show that 137 males died during that period for every 100 females.

Having thus established his first two propositions, Dr. Simpson proceeds to the third. On the fact that, of the 527 still-born putrid children, 257 were male and 270 female, he grounds the assertion that, of the children who die in utero before the commencement of labour, as large a proportion are female as male. Any assertion with reference to this subject that rests on a small number of figures must necessarily be looked on with suspicion. The opinion generally entertained is, that a greater mortality prevails before birth among male than among female infants, but we are not aware of the existence of any conclusive evidence on this point. The only data, indeed, that we know of besides what Dr. Collins's tables furnish are derived from the bills of mortality of the city of Hamburgh.* According to them, the proportion of the sexes in cases of premature still-born children is $52\frac{1}{3}$ males to $47\frac{2}{3}$ females.

Dr. Simpson next adduces illustrations of the greater size and weight of the male than of the female fetus, and then details the observations of the late Dr. Clarke, which established the fact that the head of the male fetus, measured across from ear to ear, is nearly $\frac{2}{8}$ of an inch greater than that of the female, $\frac{3}{8}$ of an inch greater in circumference, and nearly $\frac{1}{8}$ of an inch in the transverse diameter. Dr. Simpson, drawing from these facts a somewhat wider inference than Dr. Clarke had done, attributes to this excess in the dimensions of the male head the greater number of complications and casualties accompanying the birth of males. His statement, however, that no other traceable cause for this difference in the mortality of the two sexes is to be found in the mechanism of parturition, is not strictly accurate. Preternatural presentations are considerably more frequent in the case of male than of female children; a circumstance which, wholly independent of the larger size of the male fetus, would account for a certain excess of suffering to the mother and of mortality to the infant. This excess was estimated by Riecke to be in the proportion of 1·40 to 1; and of the 409 preternatural presentations recorded in Dr. Collins's work, 218 occurred in the case of male children; being in the proportion of 114 to 100; or, applying to it the same correction as is employed by Dr. Simpson, 108 to 100.* It must remain for more extended researches to show how far this excess of preternatural presentations in the case of such infants is real; we wish only to prove that this part of the case does not at present admit of being stated quite so absolutely as Dr. Simpson has done.

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* Busch und Moser Handwörterbuch der Geburtskunde, Bd. i, p. 29.

He next proceeds to show that the excess of male infants increases in direct proportion to the difficulty of the labour; a fact very well illustrated by the following table:

| “ Nature of the labour and complication. | Total cases. | No. of Male children. | No. of Female children. | Proportion of Males to Females. | Ratio of excess of Males. |
|---|---|---|---|---|---|
| Labours generally | 16654 | 8548 | 8069 | 106 to 100 | 6 |
| Tedious labours | 109 | 65 | 44 | 148 ,, | 48 |
| Forceps cases . | 24 | 16 | 8 | 200 ,, | 100 |
| Crotchet cases . | 74 | 50 | 24 | 208 ,, | 108” |

(p.27.)

The same fact had already been exhibited, in a somewhat different manner, by Dr. Clarke, who showed that, in cases of head-presentation, the excess of males among still-born children increases in direct proportion to the difficulty and protraction of the labours. Very powerful indirect proof of this is afforded by another table:

| “ Non-putrid children stillborn. | Total. | Males. | Females. | Proportion of Males to Females. |
|---|---|---|---|---|
| At full time . . | 532 | 320 | 212 | 151 to 100 |
| Prematurely . . | 62 | 34 | 28 | 121 to 100” |

(p. 30.)

Which proves that among premature children whose head is smaller, and its passage through the pelvis consequently attended with less difficulty, the proportion of still-born males to still-born females is by no means so great as in the case of children born at the full time.

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* We observe that Dr. Simpson quotes this fact from a notice of Riecke's work in the Archives Générales de Médecine, where the French writer has represented his statement as referring to artificial labours of all kinds. Our authority is Burdach, who in his Physiologie, Bd. iii, Seite 84, represents Riecke's statement to refer to those cases of labour in which the necessity for manual interference arose from preternatural presentation of the child.

The occurrence of greater dangers, and of more deaths, both of mothers and infants, in first labours than in subsequent ones, does not appear to us to have been adduced in evidence on this point with propriety; since the grand impediment to the passage of the head—that presented by the pelvis—must remain the same in subsequent labours; and the chief causes of difficulty peculiar to first labours depend, for the most part, upon dynamic causes on the part of the mother.

Dr. Simpson's opinions, however, do not rest on mere indirect evidence, or on arguments deduced from any supposed effect of the larger size of the head in the male fetus, but he proves that the average duration of labour is longer with male than with female children; and, further, that the difference in this respect becomes greater in proportion to the severity and dangerous character of the labour. This fact is partly shown by 427 observations made at the Edinburgh Lying-in Hospital, which yield an average duration of labour of eleven hours thirty-eight minutes in the case of male children, and of nine hours thirty-four minutes in the case of female children, which gives an excess of two hours and four minutes in the duration of labour with male children. Data furnished by Dr. Collins's work support the second part of this statement, as is seen by the following table:

| " Labours. | The average duration of the male births was | | The average duration of the female births was | | The average greater length of the male birth was | |
|---|---|---|---|---|---|---|
| | Hours | Minutes | Hours | Minutes | Hours | Minutes |
| With stillbirth (310 males and 197 females) | 11 | 27 | 12 | 10 | 2 | 17 |
| Morbidly tedious (56 males and 41 females) | 43 | 18 | 40 | 12 | 3 | 6 |
| Requiring crotchet (41 males and 24 females) | 42 | 22 | 38 | 20 | 4 | 2 |
| Leading to death of the mother (86 males and 44 females) . . | 18 | 9 | 12 | 58 | 5 | 11" |

(p. 41.)

We have now noticed the whole of the evidence adduced by Dr. Simpson in proof of the influence of the size of the head of the male fetus in causing greater difficulty in the labour and a higher mortality, both of mothers and children. He adds some remarks on the peculiarly tender structure of the brain in infancy, and on its larger size as affording an explanation of the serious results that may follow the pressure of the head in the pelvis; and concludes with some observations on "the extent of influence exerted by the male sex of the infant upon the general maternal and infantile mortality during parturition, and for some time subsequent to it." The conclusions at which he arrives are certainly startling. We give them in his own words:

"In the returns of Drs. Clarke and Collins, we have reports in the Dublin Hospital of the sex of the child in 368 cases in which the mother died from labour or its consequences. In 231 instances the child was male, in 137 cases it was of the female sex. The proportion of maternal deaths after male and female births, was therefore as follows:

| Total Deaths. | With male children. | With female children. | Proportion of males to females. |
|---|---|---|---|
| 368 | 231 | 137 | 168 to 100 |

"If we venture, then, to compute from these data that, out of 250 mothers that die in childbirth from parturition or its effects, 150 have given birth to males, and 100 to females, as the above table would seem to show, then we have in every 250 natural deaths an *actual excess* of 50 cases of loss of mothers after male births, for which (for reasons which we have previously stated at length) we can find no other explanation than the greater comparative size of the male head, and we have already attempted to prove that this explanation is in itself logically and amply sufficient to account for the consequences which we have attributed to it. In other words, among every 100 parturient mothers that die, we have 40 perishing after producing female children, other 40 perishing after producing male children, and the remaining 20 in the 100 perishing also after the birth of males; but so far forming a regular and constant *excess* of 20 per cent. of deaths in connexion with male births, traceable to no other cause than the sex and the consequent size of the infant. One in every five maternal deaths, or 20 in every 100, and 200 in every 1000, are so far the direct or indirect consequences of the greater dimensions of the head of the male infant. Now, at the present day, in Great Britain, upwards of 3000 women die every year from childbirth or its immediate effects. Hence, according to the above computation, 600 of these 3000 cases, as forming the *excess* of male over female births, are more or less immediately the results of the sex and size of the male infant. In Great Britain, therefore, the valuable lives of 500 mothers (to speak within the terms,) are lost in childbirth through the influence and agency of the cause in question.............

"We have seen, under our fourth proposition, that in the Dublin Hospital there died, during the process of parturition, and probably as a consequence of the injuries to which they were subjected, 151 male children for every 100 females. According to the mode of argument followed in the preceding paragraph, there was thus an *excess* of 50 male deaths among every 250 children, or 20 in every 100, referrible to the greater size of the head of the male infant. Further, we may take it for granted that, on a low computation, 1 in every 50 children born dies during labour, about 1 in every 25 cases being a still-birth. To be certain, however, not to overstep our limits, let us reckon only one in every 75 children to die during parturition, and 1 in every 5, or 20 per cent., of those that thus perish to be formed by that excess of mortality of males over females which we can trace to no other cause than the influence of the greater dimensions of the male head. In England and Wales about 500,000 births take place annually. By the above computation, more than 6500 of the offspring of these births die during labour, and one fifth of that number are lost in consequence of the sex and size of the male child. In Great Britain, therefore, the lives of 15,000 infants are annually lost in childbirth from the operation of this agency." (pp. 51-2.)

Applying a similar mode of reasoning to account for the excess of male infants who die within the first year after birth, he concludes "that there die annually in Great Britain upwards of 5000 children within the first year after birth, whose death is referrible to the influence of the sex and greater size of the male head during labour." (p. 53.)

We have noticed this pamphlet at much greater length than we usually do such short essays, on account of the very interesting results at which Dr. Simpson has arrived. The fact that a disproportion exists between the size of the head of male and female infants has been known to the profession ever since the time of Dr. Clarke, and that disproportion has been regarded as a cause of greater protraction of the labour and of a greater number of still-births in the case of male children. Dr. Simpson cannot therefore be considered to have discovered any new fact; but he has done what is scarcely less valuable, in showing the great importance of the fact, and the extent to which it explains that problem of which no solution has hitherto been offered, as to the cause of the great excess of male mortality soon after birth. We think, indeed, that the numbers with which Dr. Simpson works are too small for us to feel assured that the results they yield are thoroughly accurate. We need, too, more information than we at present possess as to the sex of abortions, and also as to the comparative frequency of preternatural presentations in the two sexes before we can give a thorough assent to some of Dr. Simpson's statements. Still we have no doubt but that the main facts will be substantiated by more extended observations: and we consider the essay to be an exceedingly valuable contribution to midwifery statistics.

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## ART. XVI.

*De circumvolutionibus Funiculi umbilicalis fœtus vitæ haud raro infestis. Dissertatio inauguralis quam consensu et auctoritate gratiosi medicorum ordinis in Academia Heidelbergensi, proposuit* G. A. MAYER, Med.-Chirurg. et artis obst. Doctor.—*Heidelbergiæ*, 1842.

*Inaugural Dissertation on Circumvolutions of the Umbilical Cord not unfrequently endangering the Life of the Child.* By Dr. G. A. MAYER, &c.—*Heidelberg*, 1842. 8vo, pp. 36.

ON a former occasion, we have alluded to the care with which many of the inaugural dissertations of the continental universities are written, particularly those from Copenhagen, which for many years have deservedly held so high a rank for the value and originality of their contents; we then took the opportunity of pointing out the great advantages resulting from their being prepared under the immediate auspices of the Professor to whose department the subject of the thesis more immediately belongs. Having received several which have been recently published at the University of Heidelberg, we propose to give a short analysis of them, not merely on account of the information they contain, but if possible to induce the professors and teachers at our own universities and medical schools to follow the example of their continental brethren in this respect.

The thesis which forms the heading of this notice is upon a subject which affords but little scope for novelty, but the author has nevertheless contrived to make it interesting by the quantity of the materials which he has collected about it; it may also be stated that he has had access to the ample records of the Heidelberg Lying-in Hospital, which form statistics of no ordinary extent or value.

In order to estimate the proportion of cases in which circumvolution of the cord occurs, Dr. Mayer has given a tabular arrangement of the labours at the above-mentioned institution, extending over a period of fourteen years. During this time 3587 children were born, and of them 685 had the cord more or less entangled or circumvoluted, giving a proportion of 1 in 5·236. Of these 685 cases, it was round the neck in 594, viz. 482 with a single coil, 100 with the cord twice, 10 with it three times, and 2 with it four times round the neck. In 140 cases it was coiled round other parts of the body, viz. round the feet in 56, round the trunk in 31, the arms in 29, and the shoulders in 25 cases.

It has been a prevailing opinion that entanglement of the cord depended a good deal on its being of unusual length, but the results of Dr. Mayer's observations upon a considerable number of cases do not altogether confirm it. In 656 cases the cord was found once only twelve, and in another case only thirteen inches long; the rest were as follows:

| Cases. | Inches. | Cases. | Inches. | Cases. | Inches. |
|---|---|---|---|---|---|
| 6 | 14 | 73 | 24 | 3 | 34 |
| 18 | 15 | 29 | 25 | 2 | 35 |
| 12 | 16 | 17 | 26 | 7 | 36 |
| 16 | 17 | 60 | 27 | 2 | 37 |
| 70 | 18 | 21 | 28 | 1 | 38 |
| 35 | 19 | 8 | 29 | 1 | 39 |
| 48 | 20 | 25 | 30 | 1 | 41 |
| 78 | 21 | 6 | 31 | 1 | 43 |
| 48 | 22 | 9 | 32 | | |
| 47 | 23 | 15 | 33 | | |

Nevertheless the length of the cord must necessarily be a good deal in proportion to the number of circumvolutions. Thus in 100 cases where it was twice round the child's neck, its length varied from 21 to 39 inches, although in 9 instances it averaged but from 18 to 20 inches, and once only 15. In those cases where it was three times round the neck, it varied from 26 to 36 inches, except in two where it was only 22 inches long. Dr. Mayer has observed that the cases where the cord was of the greatest length were those in which several of the child's limbs were included in the coil.

The symptoms, before or during the early part of labour, of the cord being twisted round some part of the child are extremely doubtful and obscure. The author remarks that a peculiar souffle, synchronous with the fetal heart, and capable of being detected by the stethoscope, may be considered as a proof that the funis is coiled round a portion of the child's body; but he is wrong in giving Professor Naegele, jun., the credit of having first pointed out this fact, as it was not only noticed, but very fully investigated by Dr. Evory Kennedy of Dublin, in his 'Observations on Obstetric Auscultation,' (1833,) under the name of the "funic souffle."

Among the effects upon the child resulting from circumvolution of the cord, a most interesting case by Dr. Jameson is quoted from the American Medical Recorder, (April 1823,) where the abdomen of the fetus had been tightly girded by the cord, and where the upper part of the body had become extraordinarily developed while the lower half was much emaciated; the child was born dead, probably in consequence. The true nature of spontaneous amputation of the limbs before birth, thanks to Dr. Montgomery, is now well understood, and we quote the case as an addition to the many upon this interesting subject which are collecting by some of our obstetric brethren.

Much discrepancy of opinion has existed respecting the injury to the life of the child from circumvolution of the cord. The majority consider that it may be and occasionally is the cause of the child's death.

"In 15 cases of circumvolution Mauriceau observed that, in 3 the child was born dead; La Motte observed 2 out of 6; Smellie 2 out of 5. We feel convinced that the cause of the child's death in these cases must have been attributable to other circumstances. Rœderer says that it is much less frequently a source of danger to the child than at first sight would appear; thus out of 17 cases he observed only 2, where the child's death appeared to be the result of the circumvolution. Haase did not meet with a single instance of a still-born child out of 60 cases of circumvolution of the cord, although in 9 it was drawn so tightly as to require to be cut through." (p. 27.)

In our own practice, with one exception, we cannot call to mind a single instance where the death of the child was clearly attributable to this cause.

From the same ample source of practical information, viz. the Heidelberg Lying-in Hospital, Dr. Mayer has furnished us with some interesting statistics, on the effects of circumvolution of the cord upon the child's life:—

| | | | | Children born dead | |
|---|---|---|---|---|---|
| Date. | Cases of circumvolution of the cord. | Children born alive. | Children born asphyxiated. | from other causes. | from circumvolution of the cord. |
| 1828 | 37 | 34 | 2 | – | 1 |
| 1829 | 39 | 31 | 2 | 2 | 1 |
| 1830 | 45 | 38 | 5 | 2 | – |
| 1831 | 45 | 32 | 5 | 5 | 3 |
| 1832 | 42 | 36 | 5 | 1 | – |
| 1833 | 41 | 31 | 7 | 2 | 1 |
| 1834 | 52 | 38 | 10 | 3 | 1 |
| 1835 | 47 | 38 | 5 | 2 | 2 |
| 1836 | 45 | 41 | 2 | 2 | – |
| 1837 | 51 | 43 | 4 | 1 | 3 |
| 1838 | 37 | 29 | 3 | 4 | – |
| 1839 | 54 | 51 | 1 | – | 2 |
| 1840 | 72 | 55 | 12 | 1 | 4 |
| 1841 | 78 | 61 | 9 | 6 | – |

"The tightness with which the cord is twisted round the neck of the child does not appear on the whole to be so frequent a cause of death as obstruction to the circulation of the cord itself by the pressure of the surrounding parts. Thus when the head presents, the cord may easily be pressed between the neck of the child and the mother's pelvis; in face presentations between the nape of its neck and the occiput, and also when the head is passing under the pubic arch, the cord is in danger of being pressed between the neck and pubic bones. Moreover, where there is a degree of spasmodic contraction of the os uteri when the head has passed through it, or a similar condition of the vagina and os externum, a dangerous amount of pressure may be exerted on the cord when coiled round the child's neck." (p. 29.)

Dr. Mayer gives a case where the child was actually *strangled* by the cord being twisted round its neck, this can only happen where respiration has commenced immediately after the head is born, and where the cord has been drawn tightly by the advance of the child's body; it is a case which can scarcely prove dangerous, if proper assistance be given at the right moment.

## ART. XVII.

### *A Bill for regulating the Profession of Physic and Surgery. Ordered by the House of Commons to be printed* 25*th Feb.* 1845.

TAKING up this Bill in the same point of view as a book, we may regard it as a second edition, 'revised and corrected,' of that of which we gave so ample an analysis and criticism in our last Number. Our present business, therefore, is, to notice the alterations that have been made in the work since it was last under review. They are not numerous nor very considerable, though some of them are important, and, we believe we may add, all are improvements. We shall notice the alterations under the same heads, and in the same order, as when we last examined the Bill, referring, under each head, to the page in our last Number where the subject was treated.

I. *Of the Bill in relation to the education of medical men.* (p. 194.)

1. *Medical students.* Although nothing new as to the education of students, is added in a direct form, the clause regulating the registration of students, is altered in such a way as to enable the Council of Health to ascertain, with certainty, where and how long every one has studied. The registration must be annual, and no student will be admitted to examination unless he has been duly registered. The registration fee is very moderate, being only two shillings and sixpence each year. The Apothecaries' act being only partially repealed in the present Bill, the old clause respecting apprenticeships still stands, but as the power of licensing is transferred from the Company to the Council of Health, it becomes a dead letter. It cannot possibly be intended, that the exercise of the *protective power* left by the new Bill with the Company, must depend on the fact of the party having served an apprenticeship!

2. *Licentiates of medicine and surgery.* The only alteration that applies to general practitioners is the institution of an examination in midwifery, which, however, is not made compulsory. The names of persons who have "passed such special examination satisfactorily," will be distinguished by a mark in the register.

3. *Surgeons.* A most important alteration, on the necessity of which we insisted in our former article, is made in the education of surgeons. They must now undergo the same examination as the licentiates, that is, be examined in medicine.

4. *Physicians.* The only alterations affecting physicians are the following, which are decided improvements: 1. Instead of being obliged to pass "the two years *next before* obtaining their degree" at the university granting it, they may choose *any two* years after being matriculated, to reside at the seat of such university. 2. Physicians obtaining degrees from foreign universities, must now give proof of "residence and study at the seat of one or more universities, during at least *three* years, one of them, at least, being at the university by which the degree is granted." In the former Bill, one year's residence at an university was alone required.

II. *Of the Bill in relation to the mode of examination of candidates* *for the licence.* (p. 199.) The alterations under this head are decided improvements, as far as they go; but we greatly regret that Sir James Graham did not fully follow out what he has stated to be his own views; we mean the establishment of a distinct board of examiners unconnected with the colleges, and the obligation on every person entering the profession, to undergo the same primary examination. But, we presume, he found the colleges too untractable. The improvements introduced in the new Bill are: 1, the abolition of the Glasgow examination board; 2, the obliging the Apothecaries' Company to select the examiners sent by them to join the examiners of the College of Physicians, from licentiates of medicine and surgery of ten years' standing, instead of members of the Society of Apothecaries, as formerly.

III. *Of the Bill in relation to the equality of privileges of medical men in practice.* (p. 202.) The only change under this head, is the introduction of a clause to assimilate the privileges of licentiates more closely with those of surgeons and physicians, than was the case in the first Bill. The new clause enacts, "That every person registered after examination as a licentiate in medicine and surgery, shall be admitted as a Member or Licentiate of the Royal College of Surgeons in that part of the United Kingdom in which he shall have received his letters testimonial; and every such person who shall afterwards remove into any other part of the United Kingdom, and shall practise there as a licentiate in Medicine and Surgery, shall be required to enrol himself as a Member or Licentiate of the Royal College of Surgeons of that part of the United Kingdom to which he shall so remove, and in each case shall be entitled to be so admitted and enrolled without further examination, and on payment of the like fees of admission, and on complying with the same conditions as are required of other persons who have passed their examinations and paid their examination-fees for the purpose of being admitted Members or Licentiates of the said Colleges respectively."

The important improvement here is, that henceforth all Licentiates can *claim to be Members of the College of Surgeons,* on passing the licentiate's examinations and paying the fees of admission.

IV. *Of the Bill in relation to the registration of licensed practitioners.* (p. 203.) The only changes under this head are: 1, the improved registration of students already noticed; 2, the explicit declaration that the registration fee is only payable *once*; 3, the empowering all persons then practising or entitled to practise in any *part of the United Kingdom,* at the time of the passing of the Bill, to register, on producing their diplomas and paying the registration-fee,—viz. twenty shillings as a physician or surgeon, and five shillings as a licentiate.

V. *Of the Bill, in relation to the incorporation of the profession.* (p. 204.) The only alteration, under this head is the one already noticed, relating to the admission of licentiates as members of the College of Surgeons.

VI. *Of the Bill in relation to the representation of the profession.* (p. 216.) No change is made in the Bill under this head. It is, however, to be hoped that, in the new Charters to be granted to the Colleges, some attempt will be made to institute a representation of the profession, the only kind of representation which, in our opinion, the profession ought to seek.

VII. *Of the Bill in relation to the government of the medical profession.* (p. 217.) *The Council of Health.* There is no change under this head. The objections we formerly made to the constitution of the Council of Health, therefore, still apply. It gratifies us, however, to find that the minister takes the same view of the proper mode of appointing the members advocated by us, though, having once proposed the present plan, he is unwilling to change it. We hope some alteration may be made before the Bill is finally passed. But should it be determined still to select members from the colleges and universities, we would suggest an important improvement in the mode of making the selection, viz. that instead of the regius professors being necessarily chosen, *ex officio*; the universities should be empowered to select *any* professor or member whom they might prefer as their representative. This seems, at first sight, an unimportant difference, but it can be shown to be of very great importance indeed, in the working of the council.

VIII. *Of the Bill in relation to the professional privileges and protection of medical practitioners.* (p. 222.) The changes under this head are the following:

1. The Apothecaries' Bill being only partially repealed, the power to prosecute unlicensed practitioners remains with the Company as before. As we contended, in our former article, that this power was really valuable to the profession—rather, however, *in terrorem* to intending or actual law-breakers, than from any actual exercise of it—we must regard its retention as, in so far, an advantage. But we are unable to appreciate the real amount of this advantage, because we are not informed as to the other relations of the Apothecaries' Company towards the members of the medical profession in future. As the general practitioner will be entirely independent of and unconnected with the Company—owing no allegiance, paying no fees to it—we cannot see what reason or grounds it can possess for prosecuting defaulters against a law which does not at all concern its interests; and we therefore fear the *terror* formerly attaching to it will be altogether lost upon evil-doers. We hope, however, from this virtual acknowledgment by the minister of the right to prosecute unlicensed practitioners, that, in the course of the discussion on the Bill, some means will be found to prevent this power of prosecution being a mere *brutum fulmen*, a word and nothing else! In short, we hope the old Apothecaries' Act will still be entirely repealed, and the power of prosecution placed elsewhere.

2. The only other alteration is the substitution of the second of the following clauses for the first.

*First Bill.* "And be it enacted, That every unregistered person who shall wilfully and falsely pretend to be, or take or use any name or title implying that he is registered under this Act, shall be deemed guilty of a misdemeanour in England and Ireland, and in Scotland of a crime and offence, and being convicted thereof, shall be punished by fine or imprisonment, or both, as the Court before which he shall be convicted shall award."

*Second Bill.* "And be it enacted, That every unregistered person who shall wilfully and falsely pretend to be, or take or use the name or title of Physician, Doctor, Bachelor or Inceptor in the Faculty of Medicine, or Surgeon or Licentiate in Medicine and Surgery, or Apothecary, or any name, title, or addition implying that he is registered under this Act, or recognized by law as a Medical or Surgical Practitioner, shall be deemed guilty," &c.

We do not pretend to be lawyers, but we fear that the original clause in the first Bill will be found, on trial, to be not one whit less or more stringent, as a law against irregular practitioners, than its more wordy successor. It certainly enlarges the list of names which it is penal to assume; but he must have a barren invention indeed, who could not go beyond the nomenclature of the new Bill.

On the whole, we may say, in conclusion, that the alterations made in the Bill in the new edition are for the better; but those who have done us the honour to read our former article need not be told that these alterations fall far short of our estimate of what is expedient.

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## Art. XVIII.

*A Bill for enabling Her Majesty to grant New Charters to certain Colleges of Physicians and Surgeons. Ordered to be printed 25th Feb.* 1845.

This Bill enables Her Majesty to grant new charters to the Colleges of Physicians of London, Edinburgh, and Dublin, and to the College of Surgeons of Edinburgh. It gives no information as to the character of the charters to be granted; and as none of these have been as yet laid before parliament, the profession generally must, for a time, remain ignorant of their respective provisions. The only one of the intended charters, of the contents of which we possess any knowledge, is that of the College of Physicians of London; and it is with great concern—we may indeed say, as a member of that body—it is with no slight feeling of shame, that we announce to our brethren beyond the pale of the college, that it contains one most important clause which, in our humble opinion, not only vitiates all that is good in it, (and it contains much that is good,) but stamps it as a charter, as in the highest degree illiberal and unjust, alike unsuited to the spirit of the present time, and unworthy of the institution whence it emanates. The provision to which we refer is *the limitation of the fellowship to a small number of the members of the corporation.* At the moment we are writing, it is not finally decided whether the number of FELLOWS shall be definitively limited to *two hundred*, or shall bear a fixed proportion to the varying number of Licentiates or Associates. But, in either case, the result will be the same, viz. that *only a small proportion of the* MEMBERS (one fourth, one fifth, or one sixth) *can by possibility become* FELLOWS, that is to say, *can obtain any corporate privileges or attain any of the offices or honours of the College!* When it is considered that by the new charter, the College is reconstituted as a CORPORATION; that its title is changed to that of the ROYAL COLLEGE of Physicians in England; that by the new Bill every future English physician is *compelled* to join the corporation as a *member*, and to pay a fee on joining it; and yet that the obtaining of any corporate privileges or attaining any corporate honours, can only, by possibility, fall to the lot of a small minority;—it can hardly be imagined that such a constitution could have been framed at the present day by the members of a scientific body, or, if framed, that it could obtain the sanction of the government. That it has been framed, however, is certain; but we are far from believing that it will obtain the sanction of government without modification.

The charter recently granted to the College of Surgeons, and which has excited so much discontent in that branch of the profession, is greatly more liberal and just than the one under consideration; inasmuch, as by the surgeons' charter, *every member may become a* fellow, and thus attain all corporate rights and privileges, on submitting to certain conditions therein laid down. It remains to be seen in what light the Physicians will regard the charter about to be granted to their College; but if, on being made aware of its character, they sit down in quiet and silent content, we shall—to say no more—be surprised. The college, however, in such a case, may be justified in considering its proceedings as sanctioned by those most affected by them; and though we will not the less maintain the justness of our own views, we will at once admit that we have been mistaken as to the opinions and feelings of the physicians of England.

Instead of stating, as we have done, that the future Members or Associates of the College of Physicians possess by the charter *no* corporate rights or privileges, we ought to have stated that *one* privilege is conceded, which the College may possibly regard as of some value: as, however, we consider it the reverse of valuable, we have rejected it from our category of corporate rights. The privilege is this: The members are permitted, on one day in the year, to meet the Fellows in the College, and to vote, *in conjunction with them*, in the election of Fellows (four or five, perhaps,) to fill up the few vacancies occasioned by death! For ourselves, we confess that we hope never to see a spectacle so melancholy—to use no harsher term—as that of a body of gentlemen thus consenting to compromise at once their dignity and their rights, by sanctioning an act of injustice towards the whole body of which they are members, and thus assisting in their own degradation.

In making these observations, we consider ourselves as discharging an imperative duty towards the College of Physicians. Considering the provision of the charter here animadverted on, as calculated to be still more injurious to the College than to the profession, we feel that we should not be fulfilling the solemn obligation we came under on becoming one of its members, if we failed to advocate any measures which we deem calculated to promote its best interests. The voice of the profession, if it chooses to speak, may be listened to, though our words may have been unheeded; while its silence, if it remains silent, will at least save the College from the annoyance of any more fruitless discussions within its own walls.

## ART. XIX.

*Geology, Introductory, Descriptive, and Practical.* By DAVID THOMAS ANSTED, M.A. F.R.S., Professor of Geology in King's College, London. In Two Volumes.—*London,* 1844. 8vo, pp. 1078.

FEW of our readers, we should hope, are unacquainted with the beautiful series of illustrated works on various departments of natural history, for which the public is indebted to the enterprise of Mr. Van Voorst, and the co-operation of the able authors who have contributed to it; and to say that the present volumes are fully entitled to take rank among them, is no mean praise. Although but a young man, Professor Ansted has long been known for the zeal and ability with which he has prosecuted various departments of geological science, under the guidance of the veteran Sedgwick; and his work may be regarded as based on the general principles held by the Cambridge professor, as well as an exposition of his opinions upon many topics at present under discussion. Our own judgment of it has been formed upon a careful perusal of nearly the whole treatise; and knowing that it coincides with that of many distinguished geologists, we do not hesitate to express the belief that it is better adapted to convey to the students a competent knowledge of the *certainties* of the science, than any other with which we are acquainted. To all who are interested in the practical operations to which geology is subservient, and which are now so extensively aided by its means, Professor Ansted's work will be peculiarly welcome, on account of the large quantity of information which it contains on these subjects. Those who seek an array of captivating theories or ingenious hypotheses, must seek elsewhere, since it does not fall within the author's plan to discuss them. The following extracts from his introduction will give a fair idea of the plan of his work:

> "In the work I am now undertaking, it is my object to acquaint the reader with the nature of the *foundations* of the science of geology; and the superstructure—by which I understand the theories and the laws deduced—will not be allowed to detain us long, because, however interesting they may be, they can only be instructive to the advanced and perfect geologist. I trust, however, I shall be able to show that the facts themselves upon which the theories are founded, are sufficiently numerous and important to deserve the most careful consideration; and that the acquirement of a general knowledge of these facts is, therefore, an object not unworthy the serious attention of all who are interested in the works of nature; and that it is an object not only deeply interesting, but permanently and immediately useful, and eminently practical; and lastly, that such knowledge is to be acquired—as indeed useful knowledge of all kinds must be acquired—not by wildly and weakly systematizing, and making gratuitous suppositions to strengthen groundless hypotheses, but by calm, sober observation, founded upon and directed by an acquaintance with what has been already effected, and having constantly in view the elucidation of truth, not the establishment of a theory." (p. 3.)

When we add that the work is embellished with a profusion of woodcut illustrations, some of them geological diagrams, whilst others are delineations of the most important fossil remains of plants and animals—all executed with the utmost care and in the very best style of the art, we think we have said enough to recommend it to the attention of our readers.

## PART SECOND.

# Bibliographical Notices.

### Art. I.—*Prolegomeni sulle Neurosi, &c. &c.* Memoria del Dottor Lorenzo Gemignani.—*Bologna*, 1843.

*Prolegomena on the Neuroses, &c. &c.* A Memoir by Dr. L. Gemignani. *Read before the Medico-Chirurgical Society of Bologna.* (From Vol. iii, Fasc. iv, of the Trans. of the Society.)

The Medico-Chirurgical Society of Bologna fixed one of the subjects for the Sgarze Prize Essay of 1842, as follows:

> "To determine if neurosis be a morbid state essentially different from that common to all dynamic, irritative, and organico-chemical diseases of other structures of the system. In the essay must be laid down: 1, The most probable physiological doctrines of the general functions of the nervous system; 2, Whether nervous debility is of a specific nature, and originates in the nerves by the intervention of morbific causes, or whether the special phenomena which accompany them depend upon changes of certain particular modes of condition or action of the nerves; 3, Whether the so-called nervines act beneficially in the neuroses in virtue of a specific mode of action, or simply, as in other systems, by their elective action on the nervous systems."

The author of the essay before us was the only candidate for the prize; his labour was deemed worthy of "honorable mention" and of being printed.

Dr. Gemignani commences his essay by a general notice of the diverse and contradictory doctrines of modern neurologists. He enumerates no fewer than eight species: the tubular structure of the nervous system; the oscillations of the fibrils as electric conductors; the physiological independence of the nervous system in general, and of the ganglionic system specially; the reflex doctrines; the irritability of Glisson; excitability, &c.; and compares these one with another. Thus, for example, he observes that the doctrine of Pugginotti, that the ganglionic centres are the seat of the conservative instincts, is totally opposed to that of Müller and Hall; that the theory of the "tubulosity" of the nervous fibrils is incompatible with the theory of their being electric conductors, &c. The arguments for and against these views are developed in four successive chapters, with considerable ingenuity, but principally with reference to Italian authors and polemical controversies, for the most part unknown to us Tramontanes. Dr. Gemignani also intermingles a neat little theory of his own. There are a few novel views, as, for example, that the nerves are prolongations of the arteries, and the hypothetical inferences to be deduced therefrom. These, however, appear to us to be more ingenious than plausible; at least they are much too hypothetical to be admitted into our valuable pages. His general conclusions are, that the nervous fibrils are tubular (prolongations of the arterial trunks, as we have just now remarked), and contain "a peculiar fluid of a nature unknown, but probably the quintessence of the blood;" that primarily the nerves are formed thus, and the nervous system developed, from the periphery to the circumference; that the sensitive fibrils gradually form trunks as they pass to the cerebro-spinal axis; that arrived there, they enter into relations with the motor fibrils (the ultimate terminations of the *cerebral* arteries), and that reunited into nervous cords, they again pass from the brain into the spinal cord, and are thence distributed as motor nerves to all parts susceptible of motion.

Dr. Gemignani's pathology and therapeutics are altogether hypothetical, and without interest for the English reader.

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ART. II.—*The Natural History of Animals; being the substance of Three Courses of Lectures, delivered before the Royal Institution of Great Britain.* By THOMAS RYMER JONES, F.R.S., F.Z.S., Professor of Comparative Anatomy in King's College, London. Vol. I. With 105 Illustrations.—*London*, 1845. Small 8vo, pp. 362.

THIS very beautiful little volume appears intended to convey such a general view of the natural history and comparative structure of the different classes of animals, as the intelligent student of Professor Jones's former 'Outline' might present to his female friends; for it consists of essentially the same matter, adapted, both in style and illustration, to be a drawing-room rather than a library book. For this purpose it is admirably designed; its whole getting-up being highly attractive; and its illustrations beyond all praise. Several of them surpass in beauty anything of the kind which we have ever seen; and almost any one of them would have been deemed a marvel of the art of wood engraving, before Mr. Van Voorst commenced the series of illustrated works, which has gained him so high a reputation, and which has done so much to promote the study of natural history. The volume before us includes only the radiated classes, and the lower articulated as high as the myriapoda. Having subjected it to a careful examination, we believe that we may safely pronounce it to be a trustworthy as well as an attractive guide to the study of these branches of natural history,—except in two particulars. 1. We altogether dissent from the notion that the nervous system of the lower animals can exist in the state of "imperceptible molecules diffused throughout the substance of their bodies;" which appears to us to be just as repugnant to the true *idea* of a nervous system, as it would be to that of a circulating system for us to say that it existed in any animals in the condition of minute unconnected cavities diffused through the body, instead of forming a series of continuous channels. 2. We are surprised to find Professor Jones still holding to the doctrine that the *Fungiæ meandrinæ*, and similar zoophytes, are *agastric*, "absorbing from the ocean by means of their whole surface, and not through any mouth, the materials necessary for their sustenance." Distinct proof has been long since given, that these zoophytes have the same general structure with the sea anemone, and are nourished in the same manner. We have ourselves seen and *fed* living *caryophylliæ*; which differ only from fungiæ in being mounted on a footstalk.

ART. III.—*The Philosophy of the Moving Powers of the Blood.* By G. CALVERT HOLLAND, M.D. Physician extraordinary to the Sheffield Infirmary, &c. &c.—*London*, 1844. 8vo, pp. 308.

THIS volume consists of a series of essays on the circulation, which have from time to time appeared in the 'Edinburgh Medical and Surgical Journal,' and which have been the result of long-continued attention to the subject. Dr. Holland's object seems to have been rather to criticise the experimental results obtained by others, than to advance anything particularly new of his own; at least we cannot see that the results at which he has arrived, differ essentially from those of other physiologists, who agree with him in regarding the heart's action as by no means the sole moving power in the circulation. He exposes very clearly the fallacy of the arguments on the other side, which have been drawn from the experiments of Magendie, Poiseuille, Barry, &c., and points out the difficulty—nay, almost the impossibility—of devising experiments on this subject which shall be really conclusive, in consequence of the intimate relationship which exists amongst the different vital operations, causing any interference with *one* to give an unnatural condition to the *rest*, which must in turn react upon the first. Dr. Holland contents himself with demolishing the fortifications which his opponents have cast up around their theory; but he does not substitute anything very definite in its place. The work cannot be regarded, therefore, as a complete treatise upon the circulation; for there is scarcely any reference to comparative anatomy, and none to embryology, in both of which departments numerous valuable results of "experiments prepared by nature" are to be met with. Our own views in regard to the presence, in the capillary circulation, of a certain force independent of the heart's action, have been frequently expressed; and we need not, therefore, discuss the subject over again, but shall simply recommend Dr. Holland's work to the attention of such of our readers as wish to go more deeply into the question, than they can do by means of the ordinary treatises on physiology.

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ART. IV.—*Tausend Aphorismen über die Geburt des Menschen.* Von JOSEPH HERMANN SCHMIDT, M.D. &c.—*Berlin*, 1844.

*A Thousand Aphorisms on the Birth of Man.* By DR. J. H. SCHMIDT. —*Berlin*, 1844. 8vo, pp. 246.

IT is very annoying to the patience of a reviewer to wade through a book which is written in a peculiarly difficult style and, withal, of no very humble pretensions, to be led on from page to page of his wearisome journey, in the hope of finding something worth notice; and at last, when he reaches the end of his trial, not less worn out in mind than in patience, he is obliged to close it with the feeling that the task has been an utterly fruitless one, and for the best reason, because there has been no fruit to gather.

Such is the case with the book now before us. It is a singular specimen of pompous transcendental pebble-picking, mystifying as well as misleading a perhaps learned, but certainly by no means practical mind into all sorts of absurd extravagances.

It cannot be denied that the author is an original thinker, for it would puzzle the wisest heads to find the analogies, parallelisms, similes, and antitheses in which his thoughts seem to revel on every subject and occasion.

We can scarcely call his paragraphs aphorisms, for we cannot say that we have found anything in the whole book which deserves the name of a good practical aphorism.

As a specimen of style we give the following:

> "The muscular fibres develop themselves in a vascular system in quantitative succession of stages by the intermediate stage of the half fibres, in the uterine system, also in *periodical* succession of stages by *the intermediate stage of the half fibres*, but in the one case as in the other, the *functional pulse* develops itself parallel with the formation of the substratum, (of the fibres)." !! (§ 64.)

As a specimen of his analogies, &c. we will quote his 256th aphorism.

> "Generally speaking, there exists a wonderful analogy between the formation of the brain and of the ovum, although not with strict parallelism of the individual portions. The chorion is the dura mater, the amnion the arachnoidea, the decidua the pia mater of the ovum. The pia mater forms the inner covering of the brain, in the ovum the outer one, which latter is owing to the ovum being through it connected with a still greater covering, (the mother.)" !!

At another time he compares the uterus to an intestinal canal, the broad ligaments of which are the mesentery; but his grand triumph in the way of parallelisms and analogues is where he considers menstruation, pregnancy, and lactation, to be a species of physical trinity, like magnetism, electricity, and chemical action. Wherefore he calls up other triune combinations, medicine, surgery, and midwifery; nervous, vascular and cellular tissue; and winds up, most appropriately with "church, state, and school," rather shocking his conservative readers by putting the state first. What a pity it is that our friend Alexis had not visited Paderborn, from whence our author dates his lucubrations, before he came to London!

Dr. Schmidt promises us another batch of a thousand aphorisms; but we have quite satisfied ourselves, and, we also hope, our readers that any further notice of the Paderborn oracles, will be unnecessary.

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ART. V.—*Ueber die Verrichtung der Wurzeln des Rückenmarksnerven, &c.* Von J. W. ARNOLD.—*Heidelberg*, 1844.

*On the Functions of the Roots of the Spinal Nerves. Physiological and Pathological Researches for estimating the Doctrines of Bell.* By J. W. ARNOLD.—*Heidelberg*, 1844. 8vo, pp. 142.

WE formerly introduced Dr. Arnold to our readers as the critic of the reflex theory of Dr. Hall; in the present volume, he appears as the critic of the doctrines of C. Bell. Dr. Arnold introduces his subject by a historical notice of the reception of these doctrines by physiologists, and of their study and progress. Then in eleven chapters he details successively the views of Bell *in extenso*, and the results of inquiries and vivisections by Magendie, Bellingeri, Schoeps, Backer, Langenbech, Müller, Seubert, Panizza, Van Deen, and an anonymous writer in Roser and Wenderlich's *Archiv*. In the two remaining chapters he describes researches of his own as to the functions of the anterior and posterior roots of the spinal nerves, and institutes a comparison between the latter and the cerebral nerves.

We gather from these reviews and from the author's own conclusions that he is of opinion the anterior roots give off muscular and not motor nerves—the posterior, cutaneous and not sensitive nerves exclusively. The anterior nerves endow the muscles with sensation as well as motion. The posterior roots are the channels of the external impressions made on the surface; they constitute the organ of the sense of touch, are, in fact, like the cerebral sensual nerves. On the contrary, the muscular nerves are not suited to receive external impressions; their sensibility is of a specific character, and has reference exclusively to the condition of the muscles. They are not the media through which chemical, mechanical, or galvanic irritants act on the sensorium, but they communicate to the latter the changes which occur in the muscular fibre. They are, of course, both centrifugal and centripetal. Dr. Arnold also thinks that the cutaneous (sensitive) nerves have this power of conduction in opposite directions. Their centripetal action is acknowledged; the contraction of the skin during various kinds of emotions is due probably to their centrifugal conduction.

We think there is considerable ingenuity and possibly some truth in Dr. Arnold's views, but they are not so clearly stated as is desirable, nor considered in their various relations. If the posterior roots are cutaneous only, and the anterior muscular only, and also insensible to external irritants, how are we to understand the suffering usually consequent on inflammation of tendinous structures? And of what class are the nerves supplied to them? These must come from the sympathetic, as no other origin is possible according to Dr. Arnold's views.

Dr. Arnold is manifestly a man of quick perception and independent temper. He blames his countrymen for the facility with which they receive theories of foreign growth without due examination of the premises, and he cares not to differ from the majority, and loudly to proclaim this difference. This conduct has apparently stirred up a nest of wasps,—small people who wish to recommend themselves to men of influence by a reckless partisanship—gefallsüchtige schwänzeleyen, or in our homely vernacular, fawning tail-waggers. It is quite true that fawning hounds when in packs are very bold and obstreporous; but they obey a master-mind. Let Dr. Arnold give proof of his mastery, not by pulling other men's theories down, but by building up a masterpiece of his own. A true prophet may win honour even in his own country.

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## Art. VI.—*Des Abscès Phlegmomeneux Intra-Pelviens.* Par M. Marchal (de Calvi).—*Paris*, 1844.

*On Intra Pelvic Phlegmonous Abscesses.* By M. Marchal (de Calvi).—*Paris*, 1844. 8vo, pp. 196.

This brochure is a reprint from the 'Journal de Chirurgie' of a series of articles which appeared in that publication at the commencement of last year. Its merits are entirely those of a compilation, since, though it contains the particulars of seventy-five observations, not one of the cases came under the author's own notice. It treats of these abscesses in the male as well as in the female subject, though, as might be expected, by far the greater number of cases refer to females, since the process of parturition is a cause of inflammation of the cellular tissue and soft parts within the pelvis, to which nothing analogous exists in the male sex. Fifty-two cases are recorded of phlegmonous abscess of the pelvis as a consequence of labour. Forty-four of these cases have already appeared in print; the remaining eight were communicated by M. Bouchat, a friend of the author, and formerly Interne at the Maternité. Eight other cases are related which occurred independently of labour; but when we find the author reporting under this head cases of suppuration or tuberculous degeneration of the ovaries, he appears to us to be departing from his real subject, and to be writing an exceedingly imperfect essay on the diseases of the internal organs of generation. The remaining fifteen observations refer either to the male subject, or to cases in which the sex of the patient had nothing to do with the occurrence of the affection; which depended on disease of the intestine, inflammation of the bladder, peritonitis, phlebitis, &c. &c. These cases, which as well as the others are mostly extracted from French writers, are all detailed at full length; a practice which has rendered the memoir needlessly prolix, though perhaps it adds to its value as a repository of facts which some subsequent writer may better understand how to employ.

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Art. VII.—*A Treatise on Corns, Bunions, the Diseases of the Nails, and the general management of the Feet.* By Lewis Durlacher, Surgeon Chiropodist (by special appointment) to the Queen.—*London*, 1845. 8vo, pp. 196.

We suspect that medical men, in general, are disposed greatly to underrate the importance of the diseases treated of in this book, in their bearings both on hygiene and therapeutics. When, however, it is considered how essential *exercise* is to the promotion of health, and how necessary it is in the treatment of many chronic diseases, any obstacle to the best form of exercise, *walking*, must be allowed to be a matter of the very first consequence. How sadly *corns* interfere with walking everybody knows. "These little things are great to little men." Mr. Durlacher's treatise ought, therefore, to be received by the profession, not merely as suplying the best information to enable them or their friends to relieve immediate suffering, but as ministering to general therapeutics, in one of its highest aspects. It is a modest and sensible performance, the result obviously of much experience, and written in a fair and honest spirit. It is, in fact, the only work on the subject which has any pretensions to scientific accuracy, or can claim the attention of the legitimate medical practitioner.

The following statement shows the spirit in which Mr. Durlacher's book is composed, and shows that it may be safely recommended to our patients:

"Although I have devoted nearly thirty years' practical experience to the investigation, and have tried various chemical and other remedial agents, yet I have never been able to disover any certain cure for corns. Nevertheless, men are occasionally to be found bold enough in their ignorance and presumption, to assert by public advertisement, that they possess an infallible nostrum, capable of thoroughly eradicating corns; and others, who pretend to extract them, seek to aid their trickey and charlatanerie by exhibiting small spicula as the roots of the corns they have extracted, although it is a positive fact, from the structure of the skin, that such an assertion must be false, and the whole proceeding the veriest imposition imaginable." (Preface, p. x.)

The external application in which the author most confides, and which he principally employs, is nitrate of silver. Our own experience had long convinced us of its pre-eminent efficacy. The volume contains many things deserving notice, but our waning space forbids our embracing them. At p. 49, the author describes "a kind of neuralgia seated between the toes," accompanied with severe pain, but for which, on examination, no obvious cause, (that is, no corn or callosity,) can be discovered. It is not a common complaint, but it is useful to know that it occasionally occurs. Like affections of the nerves in general, it sometimes defies all treatment, which, to have any chance of success, must be general as well as local.

Another case is worthy of notice: it is one in which Mr. Durlacher's diagnosis gave a happy solution in circumstances of some delicacy. A young gentleman was confined by illness, and thinking this a convenient opportunity for having a troublesome corn extracted, sent for the author. Mr. Durlacher found on the second joint of the third toe, "a festered corn, attended with inflammation," the foot being swollen and red streaks passing upwards towards the leg. The author inquired of the patient if he had any pain in the groin? "The question," says Mr. Durlacher, "seemed to astonish him, as he was confined solely on that account, and the swelling was attributed by his medical attendent, to a cause which he (the patient) considered could not possibly be the case." (p. 60.) Mr. Durlacher speedily relieved the patient's anxieties as to the source of the original pain; the corn was extracted; fetid serum was discharged; lunar caustic, hot fomentations, and a linseed-meal poultice were successively and successfully applied, the pain and swelling in the groin now subsiding.

The author states that the volume is intended for general readers as well as for the profession; and its freedom from technical language, and the perspicuity of the directions which it gives, adapt it for this purpose.

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ART. VIII.—*Practical Observations and Suggestions in Medicine.* By MARSHALL HALL, M.D. F.R.S.L. & E., &c. &c.—*London*, 1845. 8vo, pp. 359.

IT is with unfeigned concern we place our notice of this book in the Second Part of the Journal. A work from the pen of the most original and distinguished physiologist of the day, on whatever subject written, ought to command a detailed review. We are, however, compelled to state, after careful perusal, that the present volume neither demands nor justifies such a mode of treatment. Although it consists of more than fifty chapters, it contains very little that is novel, and still less that is valuable. Many of the papers have already appeared in the Journals; others are repetitions from the author's former publications; and several are supplied by his friends. Not a few of the practical novelties seem to us of doubtful soundness, and some excite surprise as coming from a man of science and long experience. In one word, we think the present work altogether unworthy the acknowledged great talents and high reputation of its author; and we think he has been very ill-advised in bringing it before the profession in its present form. It looks as if its contents had been carelessly huddled together, and the good and the bad sent to the printer, on a sudden impulse to make a book. A proceeding of this kind might be overlooked in a man of no reputation; but Dr. Hall ought to have greater respect for his own fame, than to risk the consequences of such a step. He cannot afford to bring out an inferior work. It cannot lie hid as the production of a man unknown. Like the author's former works, it will be read by the whole medical profession; and if it cannot obscure the brightness that preceded it, it will at least look darker from the contrast. We write these words in sorrow not in anger; and in writing them, we feel that we are taking the part of Dr. Hall against himself. He has written good books; he can write good books; he ought to write good books; and his disappointed readers throughout the world must be reminded that if on the present occasion he has not done so, it is because he has not chosen to do so.

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Art. IX.—*A Thermometrical Table on the Scales of Fahrenheit, Centigrade, and Reaumur; comprising the most remarkable phenomena connected with temperature in relation to Climatology, Physical Geography, Chemistry, and Physiology.* By Alfred S. Taylor, Lecturer on Chemistry, &c. in Guy's Hospital.—*London*, 1845.

If ever there was a book entitled to the character of a *multum in parvo*, this assuredly is the book, if book it may be called which book is none, but merely an engraved TABLE, with a brief printed preface. But, whatever be its appropriate name, it most assuredly contains in a single page a mass of matter, so vast, that it might easily be expanded into a goodly-sized volume,—and matter, too, highly important, very varied, constantly needed, and nowhere else to be found in a collected form. In a word, we can boldly pronounce this little work to be one of those provokingly useful things which must be bought, and which the law of convenience and comfort makes almost as necessary to us in these lazy latter days, as was the food and the drink in times "when wild in woods the noble savage ran." To give some idea of the number and kind of things here recorded, we may state that the observer will see *at a glance* almost every important fact relating to temperature, in climatology, physical geography, chemistry, physiology, &c. The following are the particulars given, under the heads Chemistry, and Physiology:

"Chemistry. 1. The evaporating, boiling, fusion, melting, subliming and congealing points of all solids and liquids in chemistry, from 12° to 374° F., from —11° to + 190° C. and from — 9 to + 152° R., including the boiling points of the saturated solutions of numerous salts, and the melting points of a large number of alloys. 2. The temperature for fermentation of various kinds, malting, putrefaction, etherification, and other chemical processes. 3. The boiling points of alcohol and acids of various specific gravities, with the respective densities of the vapours. 4. The pressure or elastic force of the vapour of water, alcohol, oil of turpentine, and ether, at various temperatures. 5. The temperatures, with the corresponding pressures required for the liquefaction of the gases. 6. The temperature for the explosion and ignition of fulminating and combustible substances.

Physiology. 1. The maximum degrees of natural and artificial heat, and minimum degrees of cold, borne by man and animals. 2. The temperature of the body in Man, Mammalia, Birds, Reptiles, Fishes, and Insects. 3. The temperature at which hybernation takes place in certain animals. 4. The temperature for the germination of seeds, incubation, the artificial hatching of the ova of birds, fishes and insects. 5. The temperature for the growth of the Sugar cane, Date, Indigo, Cotton-tree, and for the cultivation of the Vine. 6. The temperature for warm, tepid and vapour baths; the vapour baths of Russia and Finland." (pp. 8-10.)

## PART THIRD.

# Original Reports and Memoirs.

## REPORT ON THE PROGRESS OF HUMAN ANATOMY AND PHYSIOLOGY, IN THE YEARS 1843-4.

### PART II.

By James Paget,
Lecturer on General and Morbid Anatomy and Physiology, and Warden of the Collegiate Establishment, at St. Bartholomew's Hospital.

### NUTRITION.

*In its chemical relations. Use of gelatine in food.* The Amsterdam commission* for determining the nutritive properties of gelatine, as obtained from bones by steam, and used in large quantities in "economic soup" in Dutch public institutions, have confirmed the conclusion of the commission of the Paris Institute, that it has had hardly any nutritive properties when taken alone; and, in regard to the important point left unsettled by the French commission, namely, whether, when added to other kinds of food, gelatine contributes to the total amount of nutriment, they have also come to a negative conclusion. None of the three dogs to whom considerable quantities of it were, for several long periods, given both alone and in connexion with bread and potato-parings, was found to have derived the least benefit, or to have gained any increase of weight from it.

[The experiments were accurately enough made, and warrant the conclusions, as far as "economic soup" and dogs are concerned. But they are so opposed to the results of common observation of the nutritive value of jellies and other like gelatinous food, that some fallacy must be suspected in both these and those of the French commission. Either dogs are improper subjects for such experiments, or, more probably, the mode of preparation decomposes the gelatine. The action of the hot steam to which the bones, already boiled, are subjected for about seven hours in each of several days, may effect a part of the change by which, when it is complete, gelatine loses its power of *setting*, and in which the arrangement of its elements may be so altered, that they cannot be reconstructed in a nutritive form.]

*Transformations of the sugar in food.* M. Chossat† found that of many birds fed on sugar alone, none lived more than sixteen days; and he thought he observed that in those which had copious bilious evacuations, no unusual quantity of fat was accumulated in the body; but in those in which these discharges did not occur, fat was abundantly formed. He assumed, therefore, that the sugar is, under varying circumstances, sometimes converted into the constituents of fat, and sometimes into those of bile. But the experiments of M. Letellier,‡ which were more carefully made, contradict these. Their results were, that among seven turtle-doves fed on cane-sugar and bread with water, (coagulated albumen having been added, in two cases, after the sixth day,) not one possessed, at the time of death, the average quantity of fat: their general average of fat was nearly 60 per cent. less than that found in healthy individuals, i. e. the average in health was found to be 15·8 per cent., and in those fed on sugar only 6·3. Yet the fæcal evacuations had been, in most cases, moderate. But the sugar, though it did not increase the fat, served towards maintaining the temperature of the body and the average production of carbonic acid. The quantity produced by these birds, on ordinary diet, was 13.2 grains per hour; during seven days' starvation, it was 6·65 grains per hour; and during three days' diet of sugar, 11·08 grains. In turtle-doves fed for six days on butter, the quantity of fat found after death was scarcely more than in those who had died on the diet of sugar without albumen; and the quantity of carbonic acid produced by them was 9·08 grains per hour. [Still these experiments of M. Letellier, though they may prove that sugar alone will not keep pigeons alive nor increase their fat, do not disprove that, under favorable circumstances, fat is formed from sugar. Such a transformation is proved, by the experiments of Huber and Milne Edwards on bees, which formed wax while feeding on pure honey; and to their evidence may now be added that of Grundlach.* He fed bees on sugar-candy in water, and they formed wax; from twenty pounds of honey, also, they formed a pound of wax.]

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* Het Instituut, No. 2, 1843, pp. 97-114; imperfectly reported in the account of the sitting of the Académie des Sciences, 11 Mars; in the Gazette Médicale, 16 Mars 1844.

† Gazette Médicale, 21 Oct. 1843, from the Acad. des Sciences, Seance du 16 Oct.

‡ Annales de Chimie et de Physique, Juin; and Ann. des Sciences Nat., Juillet, 1844.

In a controversial note on this and other subjects,† Liebig quotes a letter from M. Demesmay, who states that the result of abstracting from the food of fifty-eight cows a certain quantity of oil-cake, which contains from 10 to 15 per cent. of oil, and substituting for it an equal weight of beetroot-molasses, was a more rapid fattening and a more copious production of milk. And to these evidences of the transformation of saccharine into fatty substances, it may be added that butyric acid may be formed in the fermentation of sugar,† and that M. Avequin,‡ has noticed that the quantity of that crystalline wax which forms on the exterior of the sugar-cane, (and which he has named Cerosia,) always bears an inverse proportion to the quantity of sugar within the cane.

*Production of fat in the animal body.* Besides the experiments above mentioned, others have been performed by M. Persoz and M. Boussingault. Those of the former,§ on the fattening of nine geese with maize, appear to prove that sometimes the weight of fat formed during the fattening exceeds the whole increase of weight of the body. He supposes, therefore, that the geese not only assimilate all the oily matters of the maize, and transform some of its starch and saccharine matter, but also transform a certain portion of their own tissues into fat. During the fattening, the blood becomes highly charged with oily matter, and much of its albumen disappears or is transformed. The experiments of M. Boussingault|| afford evidence that some nutritive substance analogous to fat must be contained in the food in order that the fatty substances of the secretions and tissues may be duly formed.

*Relation between food and excretions.* M. Boussingault¶ considers that he has proved that in three days a horse and a cow each discharged in excrement and urine (and the latter in milk also), from 356·5 to 418·5 grains less of nitrogen than they had taken in their food. This quantity, therefore, he supposes must have passed off in respiration and transpiration in the free state. [But it is only presumed that the weight of the animals remained the same; and both the food and

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* Geschichte der Beinen, 1842.

† Annalen der Chemie und Pharmacie, Oct. 1843.

† See last Report, p. 15.

‡ In Mulder's Physiol. Scheikunde, p. 271.

§ Report of the Académie des Sciences, 12 Fevrier, 1844; In the Gazette Médicale, 17 Fevr. I suspect that in that fatty degeneration of the muscles which takes place when they are not exercised, the change is not a removal of the muscular fibre and deposition of fat in its place, but a transformation of the fibrine, of which one of the products is fat; that it is, therefore, a chemical not a nutritive process by which the change is effected. The nature of such a change is illustrated by Wurtz's observation (p. 250); and its occurrence is made very probable by the linear arrangement of the particles of fat, in the places of the former muscular fibres, on a plan different from that existing in any other form of fat.

|| Annales de Chimie et de Physique, Oct. 1844.

¶ Annales des Sciences Naturelles, Avril, 1844. Extract from M. Boussingault's work 'Economie rurale dans ses rapports avec la Chimie, &c.'

excretions were analysed by samples, so that small errors would be greatly multiplied in the general result; and no account is taken of what may have been discharged from the skin in hair, epidermis, &c.—an omission which must in many similar cases have left errors unaccounted for.]

A case of voluntary total abstinence from food and drink for ten days, is related by Dr. Casper.* The patient was thirty-six years old. For the first five days he suffered little, and confessed neither hunger nor thirst; during this time also he passed no fæces and very little urine. After this he became thinner and paler, his sight was weak, he had occasionally ringing in the ears, his speech was indistinct, his breath smelt unpleasantly, he discharged only a little urine, his abdomen sank in, and he was very weak. These conditions were increased on the ninth day, and he could not resist taking a little sugared water. In the night of the tenth day hunger, which he had before hardly felt, returned irresistibly, and he took food, and recovered. Mitscherlich examined the urine which was passed at the middle of his abstinence, and found that it did not differ from that of a healthy person.

*Nutrition in its relations to structure. Development of cells.* In the last Report,† the observations of Mr. Macleod are quoted, from which it appeared that in the chick, the blood-corpuscles are not developed by the formation of a cell round a preformed nucleus, but that each corpuscle is produced by the enlargement of a single granule, from the contents of which the nucleus is subsequently formed. Some other observations—by Schwann, on the development of the chorda dorsalis, by Vogt, on the development of new cells in the intercellular substance of the cartilage, and by others—had also afforded examples of cells formed before those cells within them which are regarded as their nuclei; and now, in an elaborate essay on the development of cells in general, Dr. Karsten‡ maintains that this is the regular plan of cell-development; that, at the first, each cell is a punctiform vesicle, which, subsisting on the surrounding substance, grows into a simple cell, and forms within itself some peculiar substance, either a secretion, or the rudiments of a new cell (or nucleus), or a new organism, as an ovum or gemmule.

A large portion of the evidence for this view is drawn from observations on vegetable cells. In that portion which relates to animal physiology, the chief examples are drawn from the development of the ova, gland-cells, the cells of the chorda dorsalis, cartilage, epidermis, pigment, and feathers.

In the *development of the ovum*, R. Wagner believed, from observations on the ovaries of the Agrio Virgo, that the germinal spot is the part of the ovum which is first formed, and that the germinal vesicle, vitellus and vitellary membrane are formed in succession around it; and it was in great measure through these observations that Schwann was led to adopt for the development of animal tissues the theory which Schleiden was supposed to have demonstrated for those of vegetables. Karsten considers that Wagner was deceived by the fineness of the membranes of the ovaries of the Agrio, which prevented his seeing that each of the follicles consists of two membranous cylinders—an internal one inclosing the ova, and an external one surrounding it; and that these have between them cells, which, through the delicacy of the membranes, appear as if they were within the internal cylinder, and were ova, but which disappear when the real ova are formed. The error cannot be committed with the ovaries of Lepidoptera: and among the best for examination are those of the Bombyx Mori, in the chrysalis state. The blind end of the internal cylinder may be found full of minute *simple vesicles;* and some of these may be traced, as they are examined further from the end, enlarged and filled by a granular blastema, and having in them a new cell which lies in the blastema. This is the germinal vesicle imbedded in the vitellus, and having the originally simple cell for the vitelline membrane. The same grades of development may also be traced in the ova of mollusca, if they are examined before they are filled with yelk.

The *development of secernent gland-cells* affords another example of the same plan of development. Some of Mr. Goodsir's observations agree with this view; and Karsten says the best evidence of it may be found in the follicles of the liver of mollusca and crustacea. In these may be seen, between the tunica propria and the central canal of the follicle, a great quantity of cells, surrounded by a liquid blastema, and containing a variety of granules, vesicles, and lesser cells; and there may be traced a series of formations, from the minute granule to the perfect cell, which may contain one or more cells, such as would be called nuclei, with one or more minute vesicles or nucleoli, in them. But in no member of the series will there be found a preformed cytoblast or collection of granules.

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* Casper's Wochenschrift, June 8, 1844.

† Page 5.

‡ De Cellâ Vitali; Berlin, 1843.

Schwann's and Vogt's observations on the cells of the chorda dorsalis and cartilage appear to Karsten (who has confirmed them) to support the existence of the same plan of development in those tissues; and he shortly describes the same as obtaining in the epidermis, pigment, and the rudiments of the feathers.

He denies also that, in either vegetable or animal growths, cells are ever multiplied by either generation or partition. He says of the apparent germination of the sporules of the Saccharomyces Cerevisiæ, and others of the lowest algæ (in which alone this process has been supposed to occur), that the process is not one of mere sprouting out of a part of the wall of the previous cell;[*] but that it consists in the development of a granule, which at first lies obscurely between the two membranes of which the cell is composed. As this granule is developed into a vesicle or cell, it expands over itself a part of the outer membrane of the previous or parent cell, till there is produced the appearance of two double-membraned cells united by a narrow constriction of their common outer membrane but having their own cavities distinct. And as this goes on, the secondary cell has various contents formed within it; and may, by a repetition of the same process, develope a tertiary cell in its wall. The process may be best traced in the growing sporules of Phragmotrichum; but it may also be examined in the Saccharomyces, in which an external membrane, enveloping each apparently simple cell, may be demonstrated by moistening it after it has been dried for some time.

*Anatomy of cells.* Numerous examples of molecular movements of the granules in cells are described by Mr. Addison.[†] They are seen especially in the pale corpuscles of the blood, pus-globules, and mucus-globules, which all appear full of minute molecules in energetic movement. Prof. Rathke,[‡] also, has often observed similar movements of particles within the nuclei of the cells of the ova of the frog, river crayfish, &c. But he shows that these movements depend, in all probability, on the currents produced in the fluid contents of the nuclei, by the imbibition of some of the water in which they are examined; for in every case in which they happen, the nuclei and cells become gradually larger; and, by examining them in oil, they neither enlarge nor exhibit the molecular movement. In this way may be probably explained the molecular movement of the pigment-granules of the choroid as seen within the cells. But the facts will not explain the observation of Dr. Sharpey,[§] who has seen pigment-granules coursing round and round within the spherical epithelium-cells of a tadpole, and making the complete circuit of its cavity.[‖]

## ORGANS AND FUNCTIONS OF EXCRETION.

*Skin and its appendages.* A complete examination of the structure and some of the functions of the skin and its appendages, with many original observations, has been published by Professor Krause.[¶] Of course, the sizes and weights of everything that can be so estimated are given. In explanation of the colour produced in the epidermis by nitrate of silver, and supposed to depend on the decomposition of the tissue, Krause says that if thin-cut layers of epidermis soaked in a solution of nitrate of silver be exposed to the light, and then made transparent by acetic acid, their texture may be seen to be unaltered, but there are very dark granules from 1-1000th to 1-1500th of a line in diameter, on the outside of the larger cells, which are, no doubt, chloride of silver and reduced silver, and to these, not to a decomposed tissue, the change of colour is due.

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[*] See also Sharpey, in Quain's Anatomy, p. lii.

Provincial Med. and Surg. Journal, March 9 and June 5, 1844.

[‡] Müller's Archiv, 1843, Heft vi.

[§] Quain's Anatomy, 1843, p. lvi.

[‖] On all that relates to the healing processes and inflammation, I refer to the excellent Reports on the subject by Mr. T. Wharton Jones, in the last April and July Numbers of this Review. For many experiments on the healing of fractures, see Lebert, "De la formation du Cal," in the Ann. de la Chirurgie, Fevr. 1844.

[¶] In the unfinished article *Haut* in Wagner's Handwörterbuch der Physiologie, Lief. vii.

Krause says also, that the colour of the cuticle of the Negro does not depend (as Henle supposes,) on pigment-cells, like those of the pigmentum nigrum, lying between the cutis and rete, and mingled with the cells of the latter, but, chiefly, on the colour of the proper nuclei and cells of the epidermis. There are indeed some few pigment-cells mingled with the proper cells of the middle and superficial layers of the epidermis; but they are distinguished from those of the pigmentum nigrum by containing far fewer pigment-granules, and by having always a dark (not a clear) nucleus. The colour depends especially on the dark- or almost black-brown colour of the nuclei, whether free in the deep layers of epidermis, or surrounded by cells. They have dark nucleoli, sharp outlines, appear only very obscurely granular, and cannot be broken into smaller pigment-granules. The cells surrounding them may be seen: in the deeper layers, they also are uniformly dark, though less dark than the nuclei. In the middle and superficial layers, the nuclei, as long as they can be seen, are still dark; the cells are much paler, but brownish and darker than in the corresponding layers in uncoloured persons.

The so-called *Tyson's glands*, the little white elevations which are usually found round the corona glandis of the human penis, and which, after many disputes, have been usually considered as the secernent follicles of the *smegma preputii*, have been carefully examined by Dr. G. Simon * They are, he says, no more than small round elevations of cutis covered by papillæ and epithelium. They consist of fibro-cellular tissue like that of the rest of the cutis; and the papillæ on them have no peculiar characters. The only function that can be ascribed to them is that of increasing the sensibility of the glans. The only organs which Simon could find for the special secretion of the *smegma*, (and these are not constant,) are whitish corpuscles lying in or beneath the cutis, which, with the microscope, appear as small roundish sacculi, closed below, and opening by a narrow orifice on the surface, and containing a white substance. These are usually situated on or behind the corona glandis, in front of or near the frænum, and sometimes on the anterior surface of the glans itself. Two or three may be found, or, in a few cases, as many as six.

*Cutaneous perspiration.* Krause† has managed to collect, with great care to avoid mixture, a small quantity of pure cutaneous perspiration from the palm, in which, as is well known, there are no sebaceous glands. The fluid collected, yielded with boiling ether some small globules of oil and crystals of margarine: it was acid, but after twenty-four hours became alkaline by the development of ammonia. In another experiment, he found that the tissue of the epidermis, independent of the fatty matter secreted on its surface, contains a fatty substance.

He has also endeavoured to number and measure the sweat-glands. As an average, he says, it may be estimated that in each superficial square inch of the body there are 1000 orifices of glands of 1-6th of a line in diameter; the greatest and least numbers in this space being in the palm 2736, in the sole 2685, in the cheek 548, in the neck, back, and nates 417. The whole number, therefore, excluding the axillæ, in which they are peculiarly large and thick-set, may be estimated at about 2,381,248. Accepting these numbers, and supposing each gland to be occupied by a column of fluid presenting at the orifice a hemispherical surface, 1-56th of a line in diameter, (the size which Krause found by measurement in some drops in a warm and moist but not *sweating* skin,) then the whole of the glands would present an evaporating surface of 7·896 square inches. Hence it is probable, (according to ascertained laws of evaporation, and from experiments purposely made,) that a portion only of the fluid discharged by cutaneous exhalation is produced by these glands; for there could not be more than 3365 grains evaporated in the twenty-four hours from such a surface, under favorable circumstances; whereas Seguin's experiments show that the daily cutaneous transpiration varies from 5·93 to 10·465 grains per minute: probably, therefore, much of what is discharged by the skin, passes by simple transudation through the epidermis, and evaporation from its free surface.

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* Müller's Archiv, 1844, Heft i.

† L. c. p. 146.

Experiments by Valentin,* made with great care on his own person, afford evidence concerning the total daily amount of transpiration, both cutaneous and pulmonary. Taking three days of ordinary life in September, weighing himself while naked, fifteen times a day, and weighing all his ingesta and sensible excretions,—the averages of the three days gave,—nutritive matter taken, 45325·5 grains; excrement, 2956·3 grs.; urine. 22439·3 grs.; perspiration, 19327·4 grs.; i.e. the ingesta being taken as 1, the excrement was ·065, the urine ·503, the perspiration ·422. But there were differences in the days; in the first, the relation between the ingesta and the excretions was as 1·097 to 1; in the second, as 1·028 to 1; on the third, as 1 : 1·090.

The hourly amount of transpiration was at some times 4½ times as great as at others; the greatest difference being caused by whatever excited sweating or a perceptible moisture of the skin, e.g., on the same day, the hourly amount was, after taking two cups of coffee, and during gentle perspiration, 1213·65 grains; in the forenoon, in pretty active exercise and sweating, 1402·75 grains; and in the evening, during copious sweating from exercise, 2056·85 grains; but, while writing quietly in the forenoon of the same day, it fell to 858·7 grains; and three or four hours after dinner, was only 509·95 grains. Of all things, none influenced the transpiration so much as rest and bodily exercise; even when the latter did not produce evident sweating, its effect was considerable. After eating also, transpiration was generally increased; and its minimum was observed during fasting and rest in a cool temperature. During the night and in sleep, the transpiration was diminished, but not more than in rest during the day. Mental exercise had no obvious influence.

Experiments by M. Magendie† confirm those by M. Fourcault and others, on the effects of covering the skins of animals with varnishes impermeable to air. The animals always died as if asphyxiated, with their hearts and lungs gorged with blood; and during life the temperature of their bodies fell gradually 18°, 24°, and as much as 36° below the ordinary standard. The same effects were produced by inclosing animals, (all but their heads,) in dresses of caoutchouc cloth.

*Structure of the nails.* Reichert‡ considers, as Kohlrausch§ also does, that the streaks described by Henle in sections of nails, as indicative of their laminated structure, are only cracks and seams produced by the knife; and says that their direction is always determined by that in which the section is made. To him the nail appears homogeneous; except for those dark spots which Kohlrausch and Krause suppose to be remains of nuclei, but which Reichert considers to be vacant spaces in the nails.

Reichert further considers, that the only matrix of the nail is that part of the cutis which forms the posterior half of the upper wall of the proximal semilunar groove, and the angle and lower wall of the groove, and that which lies beneath the lunula. There is a layer of cells similar in kind, but in different stages of development on the whole of the surface of the cutis above and below the nail; but the destination of the cells on different parts of this surface is very different, and it is only on the part indicated above that they are developed into nail-substance. Above the nail, they are developed into the thin layer of epidermis, which forms a fringe upon the borders of the nail. On all the surface of the cutis anterior to the lunula, (on what is called the *bed of the nail*,) the cells form a layer like epidermis, (i.e. according to Krause, like the deepest layer of the epidermis in other parts of the body,) between which and the under surface of the substance of the nail, there is a distinct line of boundary, the long diameter of those of its cells which are immediately adjacent to the nail being *perpendicular* to its axis. This arrangement exists as far forwards as the nail is closely adherent, i.e., to within a line of the part at which the nail and cutis separate; for this line's breadth, a thin layer of ordinary epidermis is prolonged backwards under the nail, as another layer is prolonged forwards on the inferior surface of its free part.

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* Physiologie, Bd. i, p. 7161. The details are given in Valentin's Repertorium, Bd. ix, and some in the Medical Gazette, July 19, 1844.

† Constantin James, 'Voyage à Naples avec M. Magendie;' Gazette Médicale, Dec. 6, 1843.

‡ Müller's Archiv, 1843; Jahresbericht, pp. 270-9.

§ Göttingische Gelehrte Anzeigen, Ht. xxiv, p. 229.

The cells formed on the surface of the proper matrix of the nail are, in their early conditions like those of epidermis; but as they go on to form nail, they become larger, more transparent, oval and flat; their nuclei (which according to Krause are very evident, by their darkness, in the negro,) become smaller and at last disappear, and gradually the traces of their own outlines are lost, as they unite into the compact, uniform, and nearly transparent, proper substance of the nail. It is only the cells formed at the angle of the groove which, lying parallel to the plane of the nail, have from the first a right direction forwards; those formed on the upper and lower walls, only gradually assume the same direction Hence the surfaces of vertical sections of the root of the nail are slightly marked in a penniform manner. The whole nail therefore may be described as formed from the cells produced at the matrix; and as sets of these are successively produced and coalesce, the older ones are pushed forwards over the layer of epidermis-like cells which covers the whole surface of the bed of the nail.

*Structure of hair.* Krause's* description of the structure of the nails, tends to show their exact analogy with epidermis; and he thinks the hairs may also be regarded as epidermoid tissues, their cortical portion being analogous to the outer or horny layer, their medullary portion to the inner layers of epidermis, and their shape being due only to that of their matrix. The root-sheath of the hair, he says, is only the epidermis of the follicle; its outer layer is the continuation of the deep and middle layers of epidermis, and consists of nuclei and roundish or polygonal cells, which are especially distinct in the negro, and are set vertically to the wall of the follicle; the inner layer, (or inner root-sheath,) is continuous with the outer horny layer of epidermis, and is composed of long flat cells with few or no visible nuclei. It is very apt to tear in long fibres; the holes in it, which led Henle to call it a fenestrated membrane, are produced by the manipulation.†

### KIDNEYS AND THEIR SECRETION.

*Composition of the urine.* In a highly interesting paper on the constitution of the urine Liebig‡ maintains the following points:

A. That neither lactic acid nor any lactate exists in healthy urine; the evidence being, 1, that hitherto no example is known of lactic acid being produced by the decomposition of a nitrogenous substance; 2, that the urine of the herbivora, in which lactic acid or its salts might be expected, (if they existed in that of the carnivora,) does not contain either; 3, that lactic acid has never yet been clearly detected in the urine of men or carnivora; 4, that the carnivora take no food from which lactic acid could by transformation, be produced; 5, that fresh urine will not dissolve the smallest quantity of barytes, though lactate of barytes is easily soluble in water; 6, that in various and the most careful experiments, it has been impossible to detect even a trace of lactic acid in large quantities of putrid urine, in which, if it had existed when fresh, it could not have been altered by putrefaction, and if it had not existed when fresh, it might perhaps have been produced by putrefaction. An organic acid was produced in putrefaction, but it was acetic acid combined with a resinous highly azotised substance.

B. Hippuric acid is a constant constituent of healthy human urine; for 1, benzoic acid is obtained (as Proust observed,) with acetic acid, by distilling urine with sulphuric or hydrochloric acid; but, 2, this benzoic acid cannot exist as such in the fresh urine; for benzoic acid is converted in the organism into hippuric acid; and the hippuric acid known to exist in the urine of herbivora yields benzoic acid when it is decomposed; and 3, the existence of hippuric acid may be clearly proved in even small quantities of fresh urine, by evaporating it to the consistence of syrup, mixing with it some hydrochloric acid, and agitating it with ether, which dissolves the hippuric acid.[*]

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* L. c. p. 125, &c.

† On the chemical composition of the hair, I can only refer to the elaborate analysis of J. F. J. van Laer, in the Scheikundige Onderzoekingen; Utrecht, 1842. Analyses of it are given in Schmidt's Jahrbucher, Oct. 1843; the Medical Times, Feb. 3, 1844; and, briefly, in Mulder's Phys. Scheikunde.

‡ Ann. der Chemie und Pharm., Mai; and Lancet, June 1-8, 1844.

The hippuric acid thus obtained, cannot be derived from the decomposition of benzoic acid taken in the food, (for probably none of man's food contains any;) it is formed in the body from the non-nitrogenized aliments. The acetic acid does not exist in fresh urine; but it and the resinous substance with which it is combined may be regarded as the products of the decomposition of the colouring matter of the urine.

C. The acid reaction of healthy urine is due to the presence of the acid phosphate of soda, and the mode in which this salt is produced is as follows: alkaline phosphates are taken in meat, flour and grains; none of these contains any free alkali; and it is from these phosphates, and not from any free alkali or alkaline carbonate, that the chyle, lymph, and blood, derive their alkaline reaction. Now, among the remarkable properties of the bibasic phosphates of soda and potass are their relations to uric and hippuric acids. Both these acids dissolve very easily in water, to which common phosphate of soda has been added, and with their solution, the phosphate loses its alkaline, and assumes an acid, reaction. And thus, when the uric and hippuric acids are formed in the organism, they combine with the soda of the alkaline phosphate, forming the highly soluble urate and hippurate of soda, and an acid phosphate of soda.

D. But besides this, there is another cause by which the acidity of the urine is maintained and increased. The urine of man and the carnivora contains a large quantity of sulphates; but their food does not contain either those salts ready-formed, or any oxygen-compound of sulphur. The sulphur which it does contain, or (which comes to the same thing,) the sulphur of the transformed tissues, must therefore combine with oxygen in the body, and the sulphuric acid thus formed, combining with part of the alkali of the alkaline phosphates, converts them into acid phosphates, and thus maintains and increases the acidity of the urine.

E. It follows that whether the urine will be acid or not, depends upon the nature and quantity of the *bases* taken with the food. If the amount be sufficiently large to neutralize the uric, hippuric, and sulphuric acids formed by the organism, and the acids supplied by the food, the urine must be neutral; if the amount be more than enough, the urine must be alkaline; if less, acid. And hence, no physiological or pathological inference can be drawn from our examination of the urine, unless an account be taken of the inorganic acids, salts, and bases taken with the food.

An exception to the rule that carnivora alone produce uric acid exists in the case of butterflies, (and other lepidoptera?). Heller has discovered that in proportion to the weight of their bodies they of all animals produce the greatest quantity of uric acid. Their urine is analogous to that of serpents and predatory birds, containing as a chief constituent urate of ammonia; it is principally a product of the metamorphoses which go on in the pupa state, and the red or yellow fluid which they discharge soon after being hatched is chiefly urate of ammonia. The secretion continues in after life.[†]

### VASCULAR GLANDS.[‡]

*Spleen.* Dr. Julian Evans,[§] together with many confirmations of the descriptions of Malpighi, Müller, and others, has given a more complete account than yet existed of the cells of the human spleen. They are, in comparison with its parenchyma, smaller and less capable of distinction than in the graminivora; probably from one-third to half a line in diameter, and pentagonal or hexagonal in form. They are frequently found filled with coagulated blood; and, in this condition they give the spleen a granular appearance. But the chief peculiarity of his account is, that he describes [what certainly needs confirmation, for they must be very difficult to demonstrate] a set of transparent vessels, of less diameter than the small splenic corpuscles, (i.e. less than 1-7000th of an inch,) and apparently arising from them: he believes these to be lymphatic vessels, and that they gradually unite and form trunks which can be traced from the parenchyma into the Malpighian bodies, (which he considers to be lymphatic glands,) from which, after numerous convolutions, they emerge fewer in number but larger, and pass through the pedicle by which the body is attached.

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[*] Liebig estimates the quantity of benzoic acid in the urine to be equal to that of the uric acid. Dr. Golding Bird has never found it exceed one third of the quantity of the latter. (Med. Gazette, Aug. 23, 1844.)

[†] Oesterreichische Med. Wochenschrift, Sept. 14, 1844.

[‡] Among the notices of these mysterious organs recently published, is an account of the microscopic structure of them all, by Dr. Oesterlin, in his Beiträge zur Physiologie, Jena 1843, 8vo. The results he has arrived at are not, however, so definite or important but that the further account of them may be deferred till, in the next Report, an account is given of the work of Mr. Simon on the Thymus and Thyroid Glands.

[§] Lancet, April 6, 1844.

A case is recorded[*] in which a man lived in good health for thirteen years after removal of the spleen.

Schwager-Bardeleben,[†] from his experiments on the extirpation of the spleens of animals, has obtained (as others before him have,) scarcely more than negative results. Those who survive the operation appear quite unaffected by it; so also it is with those from which the thyroid body has been removed, (except that in one rabbit the venereal appetite seemed to be increased.) Even when both have been removed, no evident effect is produced upon any of the functions of the animals that survive; but indeed few survive both operations. The removal of the spleen does not produce impotence; and the author has never seen the spleen reproduced. But, according to the continued investigations of Mayer,[‡] some slight changes are produced. He says that after the spleen has been extirpated it is usual to find all the mesenteric glands more or less swollen and blood-red, blue, or blackish. Moreover, he has often found the small lymphatic glands, near the part where the splenic artery has been tied, marked with the bloody spots, in which at last capillary networks form; and he believes that then several such glands unite and form the new spleen.

### SKELETON.

M. Breschet[§] says that he has seen ten cases in which the human malar bone was composed of two pieces, a superior or orbital, and an inferior, jugal, or zygomatic portion; presenting an analogy with the normal formation in some of the quadrumana and in several other mammalia, and making it probable that the bone is developed from two osseous nuclei.

Dr. Wilbrand[||] describes and figures a case in which a *supra-condyloid process,* like that described by Dr. Knox,[¶] but less perfect, was found on the human humerus. It arose from the front and inner aspect of the humerus, a short distance above the inner condyle, and, like a rose-thorn in shape, about six lines long and two lines in diameter it extended towards the inner condyle, to which its extremity was connected by a fibrous band; the brachial artery and median nerve after running past the inner side of the process went under the ligament to their ordinary position at the bend of their elbow.

He describes also a process on a femur, which he calls the supra-condyloid process of the femur, and considers as the analogue of the process found in certain edentata, rodentia, pachydermata, and others. In these there is a process of considerable size on the outer aspect of the thigh, at the middle, or a little above or below the middle of the shaft. The subject in whom he found a rudiment of a similar process was a strong man. The process was situated at the attachment of the short portion of the biceps femoris. It was one and a half inches long, four lines thick, and projected outwards nearly three quarters of an inch. It was covered by the persistence of the femur, and a rather large nutritive artery of the femur passed through it; it had not at all the aspect of a morbid exostosis.

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[*] Gazette Médicale, No. 28, 1844; and Oesterr. Wochenschrift, Sept. 21, 1844.

[†] Gazette Médicale, 23 Mars, 1844. Report from the Académie des Sciences; Seance de 18 Mars.

[‡] Med. Correspondenz-Blatt Rhein. und Westphal. Aerzte, 1843, No. 5; and Schmidt's Jahrbucher, Januar. 15, 1844.

[§] Annales des Sciences Naturelles, Janvier, 1844.

[||] Ueber Processus supracondyloideus Humeri et Femoris; Giessen, 1843, 4to

[¶] Edinburgh Medical and Surgical Journal, 1841, vol. lvi; and Medical Gazette, July 7, 1843. See also, on similar subjects, his numerous and interesting "Contributions to Anatomy and Physiology" in the Med. Gaz., Nov. 4, &c. 1843.

### VOICE.

MM. Pétrequin and Diday,[*] after, as they believe, satisfactorily disproving all previous explanations of the falsetto voice, maintain that in it "the glottis places itself in such a state that the vocal cords can no longer vibrate like reeds. Its contour represents the embouchure of a flute, and it is not by the vibrations of the aperture, but by those of the air, that the sound is produced." They do not explain how the assumed rigidity of the lips of the glottis by which these vibrations are prevented is produced; [it would be very difficult to do so:] but they maintain their theory by the following statements: 1. There is an analogy between the tones of the falsetto voice and those of the flute, from which the former are often called *fluty*. 2. There are but two modes in which voice can be produced: by the vibration of the vocal cords and by that of the air; and since the chest-notes are produced by the former, the falsetto must be produced by the latter. 3. Bass voices have commonly no falsetto notes [?]; because the aperture of the glottis is too large for the air to be thrown into vibrations in passing through it. 4. High chest-notes easily pass into the corresponding falsetto notes when we try to soften them; for when we wish to diminish the loudness of any note we are singing, the glottis is instinctively constricted to prevent the note from falling in consequence of the diminished force of the current of air; but when the note which is being sung is high, and the ligaments already very tense, a reduced current of air could not make them vibrate if they were still more tense; the air therefore, instead of making them vibrate, vibrates itself as it passes between them, and the glottis is changed from a reed-like to a flute-like instrument. 5. In the same manner when we try to strengthen a low falsetto note, it unavoidably assumes the character of a chest note, by the lips of the glottis passing from the rigid state to that of vibration,—from the state in which the air alone vibrates in passing between them, to that in which themselves vibrate. 6. The difficulty of passing imperceptibly in an ascending or descending scale, to or from the falsetto notes, indicates that the state of the glottis in the two kinds of voice is wholly different. 7. The supposed change, from the vibrating to the rigid state of the lips of the glottis, may be imitated and illustrated with a reed-instrument, such as a bassoon. Its ordinary notes are like chest notes—but if, while sounding them, the reed be suddenly taken hold of and held with forceps so as to prevent its vibrations (though nothing else be altered,) the notes become acute, soft, and whistling—they pass from reed-notes to flute notes—from those like the chest-notes to those like the falsetto.

### NERVOUS SYSTEM.

*General anatomy. Structure of the nerve-fibres.* Reichert[†] confirms Volkmann and Bidder's account of the speciality of the sympathetic nerve-fibres, their distinctness in size and structure from the cerebro-spinal.[‡] He believes also that the tissue which invests the smallest fasciculi of the sympathetic fibres of the higher vertebrata, (that which has been variously described as filamentous epithelium, fibro-cellular tissue, *formatio granulosa*, &c.,) is a transparent, finely granulated membrane, which has a peculiar tendency to wrinkle, and sometimes to separate, in a longitudinal direction, so as to assume the appearance of a fibrous texture [§]

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[*] Gazette Médicale, Fevr. 23, and Mars 2, 1844.

[†] Müller's Archiv, 1844; Jahresbericht, p. ccvi.

[‡] See Report, 1842, p. 34. But Valentin still maintains the absence of any distinction between the two sets of fibres, in Müller's Archiv, 1844, Heft iv, p. 395.

[§] In like manner he describes the tissue connecting the vessels and other elementary parts of the kidney, as Mr. Bowman does who calls it the matrix, as a uniform structureless substance which has even less tendency than the similar connecting tissue in most parts of the body has to wrinkle itself or break up so uniformly as to appear like fibro-cellular tissue. In all this his view coincides with that of Dr. Todd and Mr. Bowman. (See last Report, p. 5.)

*Central ends of nerve-fibres.* In a monster without either brain, medulla oblongata, or spinal cord, Dr. Lonsdale* examined the central extremities of the roots of several of the cerebral nerves, (from the 5th downwards,) which were hanging free and unattached in the cranial cavity. The extremities were enveloped in a delicate membrane of filamentous tissue, but after removing this and numerous granules which surrounded the nerve-fibres, it was quite evident that the latter, in every instance in which they could be examined, formed loops. Each fibre, after passing to the central end of the fasciculus, then turned back upon itself, and could be traced down the fasciculus towards the periphery. The fact has peculiar interest in that it adds probability to the opinion of Valentin, Carus, and Klencke,† that in the normal state the nerves in their cerebral central extremities (as they are called,) form loops, analogous to those formed at their peripheral extremities.

But that this is not the only mode in which the nerve-fibres are related to the centres would appear from the observations of Dr. Will‡ on the nervous ganglia, and the origins of the nerves in invertebrata. He states that the primitive nervous fibres terminate or commence in certain nerve-corpuscles or ganglion-corpuscles within the cephalic and other ganglia. The general results of his examinations‖ (so far as they are likely to be soon applicable in human physiology,) are, that the nerves enter and leave the ganglia through constricted apertures or meshes in its external investment, the fibres of which are continuous with those of their neurilemma, and with others by which the ganglia are partitioned. The ganglia contains besides the nervous fibres and the nerve- (or ganglion-) corpuscles, a granular substance filling up the spaces between them, and often coloured by pigment, and various cells. There are two kinds of ganglion corpuscles. In the one kind, the space between the investing membrane (the secondary-cell of Henle,) and the cell is filled by a pellucid hyaline substance, which coagulates by the action of water or acids. Each of these corpuscles has always one appendage, a simple tube, which never divides into branches, but may be traced into direct continuity with a primitive nerve-fibre, or tube. In the ganglion-corpuscles of the second kind, there are numerous minute cells without nuclei in the clear substance within the investing membrane; and they have generally several appendages, which neither are nor contain tubes, but are striated, and consist throughout of fine fibres. In their course they divide into two or three branches, which may again branch, and even break up into their component fibres. The larger branches have, at various distances, varicose enlargements; and the smallest ones run together into very small ganglion-like swellings, with dark central spots like nuclei, from which again similar fibres proceed in all directions.

When the nerves enter at the cephalic margin of the ganglion, after passing through the constricted aperture, they spread out a little, and enlarge, and finely granular substance lies between them; when they leave it they become closer again, and similar granular matter accompanies them for some distance in their sheath. They remain separate in their course through the ganglion, lying immediately beneath its dorsal surface, and give off from the outer margins the lateral nerves, which, like themselves, leave the ganglion by constricted apertures in its neurilemma, and are accompanied by granular matter.

The tubular appendages of the ganglion-corpuscles of the first kind are all directed towards the exit of the nerves, and become connected with them near or at the point at which they emerge. From their attachment to the corpuscles, the appendages gradually become narrow, till they attain a certain permanent thickness nearly equal to that of the primitive nervous fibres into which they are continued.

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* Edinburgh Medical and Surgical Journal, Jan. 1844.

† Report, 1842, p. 36.

‡ Müller's Archiv. 1844, Heft ii, p. 76. His account is very similar to that of Helmholtz, who, in his dissertation 'De fabricâ syst. nervosi evertebratorum,' Berol. 1842, (analysed in Müller's Archiv. 1844, Jahresber,) has described the like structure in many more species, and especially the direct passage of the nerve-fibres into the ganglion-corpuscles of the cephalic ganglion of the leech.

‖ The chief subjects of examination were the leech, Helix pomatia, Astacus fluviatilis, and Lymnæus stagnalis. Details of the modes of preparing the nerves for examination are fully given in the paper.

*Peripheral terminations of the nerve-fibres.* The investigations of Henle and Kölliker,[*] have proved a new and peculiar mode of termination of the nerve-fibres in the little bodies, seated especially in the nerves of the fingers and toes, which were discovered and to a certain point well described by Pacini of Padua, in 1830. These bodies (to which the name of *Pacinian corpuscles*[†] is now given,) are found in man at all ages after the twenty-second week of fœtal life, and under all circumstances, and in many mammalia. They are most numerous on the cutaneous nerves of the hands and feet; but they occur also sometimes on other sensitive cerebro-spinal nerves, and on the sympathetic plexuses in the mesentery and mesocolon, and about the pancreas; where they are especially numerous in cats. In man, from 150 to 350 may be counted on a single limb: and they are chiefly abundant on the branches of the digital nerves just penetrating the cutis; to which they are attached singly, or in pairs, or, sometimes in groups, by little fibro-cellular pedicles. Through the pedicle of each, a single primitive nerve-fibril passes into the corpuscle.

The corpuscles are of various form, elliptic, ovate, obovate, crescentic, or reniform: they measure, (in parts of a line,) from ·66 to 1·2 in length, and from ·45 to ·6 in breadth. They are semitransparent, slightly glistening, and appear as if a central cord passed through them. Each of them is composed of from 40 to 60 very thin coats, arranged round a central canal or cavity, like so many capsules enclosed one within another; and each coat or capsule is composed of two layers of fibro-cellular tissue, an outer layer with circular, and an inner with longitudinal fibres. Between each two adjacent layers or capsules, there is an albuminous fluid; it is most abundant between the outer capsules, which are less compactly arranged than the central ones. The outermost of all the capsules in each corpuscle is connected by cellular tissue with the adjacent parts, from which also blood-vessels penetrate inwards through more than half the layers. Here and there the adjacent capsules appear connected by partial septa extending across the spaces containing the fluid, and this is especially the case at the end opposite to the pedicle. The canal or cavity in the axis of each corpuscle contains a fluid like that between the capsules, and, in this fluid, a primitive nerve-fibril. The nerve-fibril after traversing the pedicle of the corpuscle, and a conical prolongation from the end of the pedicle through the substance of the lower part of the corpuscle, enters the cavity, and at once becomes smaller, paler, and flatter. It passes along the cavity, and at or near its distal end, terminates in a knob, or by bifurcating: in no case is anything formed like the *terminal loops* of nerves, and it is very rarely that more than one nervous fibril enters a corpuscle; neither does the terminal enlargement of the nerve-fibril resemble a ganglion corpuscle.

Of the use of these bodies little can be said. It is suggested that as their construction with alternate layers of membrane and fluid is rather like that of the electric organs of the electric ray, &c., these also may be electric organs, and, according to Pacini, the chief agents in mesmeric operations. But Henle and Kölliker could find no manifestations of free electricity in them during life. Their not occurring upon any known motor nerves, would appear to prove that they have nothing to do with motion; but their existence on many nerves of the sympathetic system, and their non-existence on many sensitive nerves, make it also probable that they are not connected with acuteness of sensation. They may be electric organs, as their peculiar structure suggests; but before they can be concluded to have any relation to animal magnetism, it would be advisable to prove that *that* has any relation (except in name,) to physical magnetism or any form of electricity.

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[*] Ueber die Pacinischen Körperchen; Zurich, 1844, 4to.

[†] A minute account of them will be found in the last January Part of this Journal. A further account of them in several mammalia is given by Pacini, in the Annali Univer. di Medicina, Gennaio, 1844. They are described as lacteal organs by M. Lacauchie, the nerve-fibril being taken for a chyle vessel, in his communication to the French Academy of Sciences, Oct. 30, 1843; and, more recently, by Mayer, as glands with excretory ducts passing into the nerves, in the Oesterr. Med. Wochenschrift, Sep. 14, 1844; from the Med. Corresp. Rhein. und Westphal. Aerzte, No. 3, 1844.

## GENERAL PHYSIOLOGY OF THE NERVOUS SYSTEM.

The publication of the collected observations of MM. Matteucci and Savi is an important fact in this year's history of the progress of nerve physiology; but the contents of their work* are not of this year's growth, consisting as they do, almost entirely, of the observations which have been a long time in course of publication,† and are now collected and arranged. They cannot therefore be brought within the range of this Report; though the observations which M. Matteucci has made since the publication of his work properly fall within it.

Of these continued observations, some were made with M. Longet‡ to determine the influence of electric currents on the anterior roots of the spinal nerves and the anterior and lateral columns of the cord. The result was that their influence is wholly different when exercised on centrifugal fibres alone, from what it is when exercised on mixed fibres. In the latter case, (according to the experiments performed before these last,) contractions take place only at the commencement of a current directed centrifugally, and at the interruption of a current directed centripetally; in the former case the contractions ensue only at the closure of the circle with a centripetal current, and the opening of one with a centrifugal current. The anterior (and, though with less energy, the lateral) columns of the cord act, in these respects, like the motor nerve fibres.

Other researches§ show that there is a direct proportion between the quantity of electricity employed in repeatedly exciting (through the lumbar nerves,) muscular contractions in the posterior extremities of frogs, and the amount of force exerted by the muscles thus contracting. The proportionate quantities of electricity were measured by the quantity of zinc which was dissolved in its production in the several experiments; and the muscular force by the distance through which a weight attached to the feet was drawn. The muscular force was reduced to one half and to one third, when the current was reduced, in different experiments, to those amounts. The amount of force exercised by the muscles was six times as great as would be obtained by the combustion of the same quantity of zinc, or by using the same current in an electro-magnetic apparatus.‖

In an endeavour to establish a theory that the cerebro-spinal nerves (excepting nerves of special sense,) should be classed as muscular and cutaneous nerves, and not as motor and sensitive, Dr. J. W. Arnold¶ (Heidelberg,) relates some experiments which render it possible that the mind derives the consciousness of the position of a muscle at any given time through the medium of the motor, and not of the sensitive nerves, or at least through the medium of filaments which are included in the anterior spinal roots. The chief fact is that when the posterior roots of the nerves of the posterior extremities of a frog are divided, although no external stimulus of either hind-leg excites movements of it, yet when by exciting other and sensitive parts, the frog is induced to move its hind-legs, it always first puts them into a position adapted for the performance of the intended movement. *E.g.*, if one of the hind-legs of a frog has had its sensitive (posterior) nerve-roots cut, and this leg be extended, when the frog wishes to leap, it first draws this leg up, and then leaps with it as well as with the others, all the nerves of which are entire; as if, though the leg could convey no sensation of objects, it still was able to give the subjective sensation of the position of its muscles.

[The fact is singular, but far from sufficient to prove the theory. It is contradicted also, so far as man is concerned, by the cases of persons who having lost the sensation, but not the voluntary motion of the arms, are so unaware of the position and state of their muscles, that they are obliged to look at what they are holding, lest they should let them fall. The other part of the theory, namely, that those commonly called sensitive nerves should be called cutaneous nerves, is founded on the notion that when the skin is stripped off a frog's hind-leg, the limb is in a state similar to one of which the posterior nerve-roots are divided. Doubtless in such a state the frog does not willingly move its leg; but is the leg therefore insensible ?]

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* Traité des Phénomènes electro-physiologiques des Animaux; Paris, 1844, 8vo.

† In the Bibliothèque Universelle de Génève; whence extracts have been commonly published in other journals.

‡ Gazette Médicale, 14 Sept. 1844. Report from the Acad. des Sciences, 9 Sept. 1844.

§ Gazette Médicale, 21 Sept. 1844. Report from the Academie des Sciences, 16 Sept.; and Annales de Chimie et de Physique, Août, 1844.

‖ There are further observations on this subject in the just-published third part of the 2d volume of Valentin's Lehrbuch der Physiologie, of which a report will have to be given next year.

¶ Ueber die Verrichtung der Wurzelnder Rückenmarksnerven; Heidelberg, 1844, 8vo. Analysis in Schmidt's Jahrbucher, April 1, 1844. Mr. Swan appears also to think that the sensitive nerves are not the conductors of our impressions of muscular fibre. "The sensory judges of slight changes produced by motion on the skin;" but the forces of "motive action are appreciated by a specific centre, probably by the striated body;" "The principal offices of the brain, &c." 1844, p. 11.

To prove the *functional independence* of the sympathetic nervous system, that is, that it is independent of, and essentially different from, the cerebro-spinal system in the discharge of its functions, Volkmann and Bidder[*] have published an extensive series of experiments on the effects of removing from frogs the brain, or spinal cord, or both, leaving in every case the medulla oblongata so that the respiratory movements might continue. The general result was to show the strongest contrast between the effects of the destruction in the parts supplied by cerebro-spinal nerves, and its effects on those supplied by the sympathetic. In the former, all the muscles were rendered at once incapable of contracting upon either voluntary or reflex stimulus; in the latter, it was long before any effect was produced. The circulation in the web continued unimpaired two weeks after crushing the cord, fourteen days after destruction of the brain, and five days after destroying both at the same time; and the pulsations were as frequent and vigorous as in healthy frogs. Sufficient evidence was also afforded, that whether the brain or cord or both were removed, the processes of exudation and absorption were very well carried on in the limbs. [The contrary results obtained by Valentin and Stilling, are shown to have been due to the improper mode in which they kept the frogs.] The intestinal canal also continued, to the time of death, to be active and irritable, and both it and the heart remained capable of being excited to healthy movements for some time after the voluntary muscles had ceased to be excitable by any kind of stimulus. Urine also was secreted in natural quantity, but was retained in the bladder, which by the destruction of the central parts of its cerebro-spinal nerves had lost its power of contraction. Food also was digested completely, and in the ordinary period, in the stomach; so that, on the whole, no organic function was materially disturbed by the destruction of the brain and spinal cord, although, by the integrity of the medulla oblongata and the respiration, the animal lived many days. Since during the same time all automatic and other movements really dependent on the cerebro-spinal centres ceased, it is deduced [and with great probability, at least, in frogs,] that the functions of the sympathetic nerve are independent of its connexions with the brain and spinal cord.[†]

The experiments just cited regarding the secretion of urine after the loss of influence from the brain and cord, are corroborated by M. Segalas.[‡] His experiments, and the cases of two patients recorded by him, tend to prove (against the experiments of Krimer,) that division or complete destruction of the lower part of the cervical region of the spinal cord, and of any or all parts below it, does not check the secretion of urine; and that destruction of the upper part of the cervical portion does not affect it, provided artifical respiration be completely and early established. When the urine of numerous rabbits, guinea-pigs and dogs, secreted after such division or destruction, was analysed, it was found sometimes of healthy constitution, and when altered, the alterations were slight and not uniform. M. Segalas, therefore, deduces that the serious changes observed in the urine of men at a late period after injuries of the spine, are due to the products of inflammation excited in the coats of the bladder, either by its long-continued distension, or by the irritation of catheters kept in it. He further shows by experiments, that the secretion of semen is not directly affected either in quantity or in composition, by injury or division of the spinal cord.

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[*] Müller's Archiv. 1844, Heft iv, p. 359.

[†] The paper contains many experiments indirectly bearing on the subject, and notices of the diseases of experimental frogs by which perhaps many failures of researches may be explained. As to the conclusions drawn from it,—it may show that the sympathetic nerves and ganglia will exercise their wonted influence upon nutrition, secretion, &c., long after the separation of their connexion with the cerebro-spinal nervous centres, but the facts do not prove that the influence of the sympathetic, on the parts in which its nerves are distributed, is different essentially from that exercised by the cerebro-spinal system on the parts which it supplies. They afford no evidence that, for example, an influence is exercised on nutrition or secretion, in one part of the body, through sympathetic fibres, more or otherwise than it is exercised in another part, through cerebro-spinal fibres; the connexion, also, which exists between the two systems and the sensations and movements of the parts in which they are severally chiefly distributed, differs in degree, but not, so far as yet is proved, in kind.

[‡] Bull.de l'Acad. de Médecine, Sept. 15 30, 1834; and Medical Times, Sept. and Oct. 1844.

### ANATOMY AND PHYSIOLOGY OF THE NERVOUS CENTRES.[*]

*Spinal cord.* In his description of the spinal cord and its membranes, M. Foville describes the following structures, none of which have, I believe, been hitherto noticed. 1. The existence of a thin external cortical layer surrounding the whole cord, formed by the more intimate approximation of the fibres. It is this which being penetrated by the roots of the nerves makes them appear as if they arose from a groove.[†] 2. Cords, rather less white and firmer than the rest of the white substance, extending all down the spinal cord, at the junctions of the central angles of its anterior and posterior columns with the margin of the corresponding commissure.[‡] 3. The continuation of the posterior-internal (posterior pyramidal) tract, as low down as the lumbar enlargement of the cord.[§] 4. The similar continuation of the thin lateral tract (that which is seen on the medulla oblongata, just in front of the restiform body,) down the whole length of the cord. 5. The arrangement of the longitudinal fibres of the cord in lamellæ whose edges radiate to and from the central axis of the cord, and which, by their connexion with the gray matter, may be said to be all fixed to the wall of its central ventricle.[‖] 6. The decussation of the anterior tracts through the whole length of the anterior commissure. 7. The mode of this decussation and of that at and above the anterior pyramids, by the layers or fibres passing not only from side to side, but from before backwards, so that those (for example,) from the right side become, in successive layers, the lateral parts of the gray matter of the left side.[¶] 8. Prolongations of pia mater passing in from various parts of the surface of the spinal cord, and converging to its centre.[**] 9. The commencement of the lumbar enlargement of the cord by an elongated narrow eminence, (like an olivary body,) at the antero-lateral angle of its lower portion.[††]

Dr. Budge[‡‡] has examined the connexion between the spinal nerve-roots and the cord of frogs, and wholly opposes his observations to those of Stilling and Wallich, who he believes have been deceived by using too low microscopic powers, and by not observing the changes of direction of the nerve-filaments at the torn or cut portion of the cord. He traces the filaments of the nerve-roots passing straight upwards in the cord, those of the upper roots overlaying those of the lower, and all becoming rather smaller. He believes that there are no longitudinal fibres in the cord which are not continuations of the nerve-fibres. Transverse fibres are found in it, but are obscure; he considers many of them to be fibres connecting (like bridges,) the ganglion globules, or their membranous envelopes; but is doubtful whether some are not independent transverse nerve-fibres. He was unable to trace any of the nerve-fibres to the brain.

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[*] On the comparative weights of the several parts of the nervous centres, see M. Bourgery's communication to the Acad. des Sciences, 23 Sept. 1844, reported fully in the Gazette Médicale, 5 Oct.; and, for many interesting considerations on their several functions, see Mr. Swan's work, "The principal offices of the brain and other centres," London, 8vo, 1844. The principal part of the contents of M. Foville's great work, 'Traité complet de l'Anatomie......du Système nerveux cérébro-spinal,' 1re partie, Paris, 1844, 8vo, were published before this year in his article *Encéphale* in the Dict. de Méd. et de Chir. pratique, and in the reports on his memoirs on the structure of the brain and skull, made to the Paris Academy of Sciences by M. de Blainville in June 1828 and May 1840; and to the Paris Academy of Medicine in the latter year by M. Blandin. I have therefore reported nothing but those views of M. Foville which are, I believe, peculiar to him, and which appeared first in the volume lately published; they relate exclusively to the structure of the spinal cord and the origins of nerves.

[†] L. c. pp. 136, 282, &c.

[‡] L. c. pp. 284-5.

[§] L. c. p. 283, &c.

[‖] L. c. p. 291.

[¶] L. c. pp. 294-6, 318, 324, &c.

[**] L. c. p. 342. These must be, or contain, the vessels injected by Mr. Smee, and described by Dr. Todd, (Cycl. of Anatomy, art. Nervous System, p. 708.)

[††] L. c. p. 138.

[‡‡] Müller's Archiv. 1844, Heft ii. The examinations appear to have been carefully made; the greater part of the long paper is a detail of the precautions to ensure accuracy.

[These results are directly opposed to those experiments of Van Deen,[*] quoted in the last Report, which seemed to prove that the nervous fibres do not proceed to the brain, but terminate in the spinal cord; for impressions did not appear to pass much, if at all, beyond the part of the cord on which the several nerves irritated were connected with it. The results of some experiments which I made with Dr. Baly upon turtles were as contrary to the conclusions of Van Deen as these examinations by Budge are. All the spinal roots of both sides, in the cervical and superior dorsal regions, were divided so that a portion of the cord six inches long had no nerves connected with its sides. Its connexion with the lower part of the cord being unimpaired, I found that every irritation of the upper end, or any other part of this loose portion of the cord, produced vivid movements in the hind limbs and tail. The movements were perhaps rather more vivid when the posterior columns were irritated, so as to produce them by reflex influence, than when they were excited directly by irritation of the anterior columns. I very gently cut slices from the cord (as in Van Deen's experiments,) and at every cut the movements of the hinder parts were produced.]

Dr. Poletti,[‡] unaware of the experiments which had already been made by Dr. Engelhardt, has observed the effects produced on the posture of the limbs of frogs, by dividing (not crushing, as in Engelhardt's experiments,) the spinal cord in different parts. When it is divided just below the occiput, the limbs are permanently flexed; the flexion becomes less decided the lower the cord is divided, till the division comes to the level of the space between the fourth and fifth vertebræ. When the cord is divided below this point, the limbs which before were flexed, are sometimes suddenly forcibly extended; they remain for some time fixed parallel to one another and to the axis of the trunk, and then gradually relax.

*Brain* [§] An excellent paper on the structure of the cerebellum has been published by Dr. C. Handfield Jones,[‖] in which many parts of Reil's obscure description are explained or rectified The sum of his account (so far as it may be made intelligible without diagrams,) is as follows: the medullary or fibrous nucleus of the cerebellum has not (as Reil and Foville suppose,) a separate "exterior shell," or "laminated stratum," from which alone the medullary axes or stems of the lobules are derived, but consists throughout of similar medullary plates, which decussate with each other as they pass onwards from the base or junction of the crura, and which are all destined to pass into the lobules. The central medullary stem of each lobe or lobule consists, first and mainly, of the medullary plates which are given off in succession from the exterior of the medullary nucleus of the hemispheres, or the lobe, as the case may be. But, besides these, the stem of each lobe or lobule has, 2dly, (what are, probably, a part of that which Foville describes as the white nervous lining of the cortical substance,) commissural plates which pass to and from the lobe or lobule next to it on each side. The first of those sets of medullary plates, which lie in the middle of the stem of each lobule, are not (as Reil supposed them) derived from the *ridge* on which that very lobule stands, and with which the *furrow* at its base forms the *articulation;* but they are those plates which form the highest part of the ridge of the lobule next preceding it. The same may be said of the lobes and their ridges. The ridge below the base of each lobule is thus formed by the elevation of those plates of the stem of the lobe which will compose the greater part of the stem of the next following lobule; and the furrow at the base of each lobule is bounded at its *proximal* side [*i. e.* the side at which the plates or fibres, if traced from the greater to the less divisions of the cerebellum would first arrive,] by the plates given to its medullary stem from the stem of the lobe, and in its distal side by the commissural plates going from itself to the lobule next beyond it.

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[*] Related in the Tijdschrift voor naturliche Geschiedeniss en Physiologie, 1842, D. ix.

[‡] Il filiatre sebezio, Dec. 1843.

[§] An account of numerous careful repetitions of Magendie's and other experiments on the pulse-like movements of the brain and spinal cord has been published by Dr. Alex. Ecker, in his 'Physiol. Unters. über die Bewegungen des Gehirns und Rückenmarkes; Stuttgart, 8vo, 1843. His conclusions fully confirm those of Magendie; especially as regards that of the respiratory movements of the brain being mainly due to the *ascent* and *descent* of the cerebro-spinal subarachnoid fluid as it is alternately subjected to and freed from the pressure of the vertebral sinuses and other veins, which become alternately full and empty in the acts of expiration and of inspiration.

[‖] London Medical Gazette, March 29, 1844.

The same plan of arrangement is repeated in the construction of the several parts of a lobule. As its medullary stem passes along its centre, it gives off in succession subordinate plates which pass into the middle of each lamina or subordinate lobule; those which go to the lamina on the *distal* side of the lobule having decussated across the fissure in its axis. And besides these plates which form the axis of the stem of each lamina, each has also, like each lobule, commissural plates by which its medullary stem is connected with those of the laminæ next before and after (or above and below) it. Moreover, as with the lobules, so with the laminæ, the plates of the medullary stem of each are not those which form its own ridge, but those which formed the ridge of the lamina next preceding it, and the plates which form its ridge are those which will pass into the central stem of the lamina next beyond it.

## ANATOMY AND PHYSIOLOGY OF THE NERVES.

*Olfactory nerve.* M. Foville* maintains that nearly all the deep origins that have ever been assigned by different anatomists to this nerve, do really belong to it; and that it is attached to the gray matter of the convolutions, the band of the convolution of the corpus callosum, the anterior crura of the fornix, the surface of the locus perforatus anticus, the fibres continued from the posterior tract of the medulla oblongata into this *locus*, the external portion of the gray matter of the corpus striatum, and the fibrous layer which invests it; and, lastly, to the anterior commissure. [But he does not appear to have direct evidence of all these origins in the human subject.]

*Optic nerve.* M. Foville† rightly describes the connexion between the commissure of the optic nerves and the lamina cinerea as being more intimate than, since it was described by Vicq. d'Azyr, it has been generally considered. He describes the gray matter at this part as the *anterior gray root* (the posterior being that commonly known, from the infundibulum); it is connected with the anterior pillars of the fornix; it is covered by a very thin white layer which extends from the commissure over the locus perforatus to the superficial layer of the adjacent convolutions; and some of the gray matter passes into the substance of the nerves. He says also that the continuation of the optic tract is not only spread over the whole upper surface of the thalamus and corpora quadrigemina, but is connected with the direct median and external prolongations of the posterior tract of the medulla oblongata with the tænia semicircularis, and by a "little nervous membrane (?)" with the temporal tuberosity of the convolution of the corpus callosum.

*Fifth nerve.*‡ The large sensitive portion of this nerve is said by M. Foville§ to pass obliquely to the outer edge of the restiform body through part of the substance of the middle crus cerebelli. From the posterior edge of this prolongation of its roots a nervous membrane passes into the nucleus of the cerebellum; and from its anterior edge fibres pass which form some of the transverse arches of the pons, or are sometimes continued into the transverse fasciculi on the floor of the fourth ventricle, where, as well as in the nervous expansion which he supposes to line the cortical substance of the cerebellum, these roots are closely connected with those of the auditory nerve.

The roots of the small motor portion are traceable, he thinks,‖ to those fibres of the lateral tract of the medulla oblongata which are given from it to the middle crus cerebelli.

*Auditory nerve.* To this, also, M. Foville¶ assigns an origin not less complex than those of the nerves already mentioned. He says that a fine white membranous nervous tissue is prolonged from its roots, from those of the fifth, and from the surface of the restiform body; which tissue, after surrounding the crus cerebelli [in which it is not difficult to see it], forms a lining (*doublure*) to the whole of the cortical substance of the cerebellum. Another nervous membrane, continuous with the preceding, lines the whole of the walls of the fourth ventricle, and is continued into some of the transverse striæ; and others are combined with the medullary velum and pass to the corpus dentatum. Lastly, other emanations from these roots pass forwards and inwards, and are confounded with the transverse arches of the pons.

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* Traité, &c. pp. 518, 525.

† L. c. pp. 182, 510, &c.

‡ Some facts relating to the branches of the fifth and facial supposed to supply the muscles of the paate, will be found in the following account of the experiments of Dr. Hein.

§ L. c. p. 507.

‖ L. c. p. 531.

¶ L. c. p. 505, &c.

*Facial nerve.* Dr. Hargrave[*] has related a case in which, as in that by M. Diday, mentioned in the last Report, the uvula was drawn to the left side in paralysis of the facial nerve, and recovered its median position when the disease ceased. [Both this case, and one of a similar kind by Dr. Williams,[†] afford additional evidence for believing that the facial nerve is the motor nerve of the levator palati and azygos uvulæ muscles, and sends its fibres to them through the superficial petrosal branch of the vidian nerve and the spheno-palatine ganglion. And this opinion must, I think, be retained concerning the arrangement of these nerves in men, although apparently contradicted by the experiments of Hein.[‡]] He could never in dogs, calves, and goats, produce contraction of any of the muscles of the palate by irritating the root of the facial nerve, neither was the contraction which he produced by irritating other roots affected by destroying the petrosal nerves going to the spheno-palatine ganglion. He succeeded, indeed, in tracing a branch of the middle posterior palatine nerve (through which the petrous filaments of the facial are supposed to pass after traversing the spheno-palatine ganglion,) into the substance of the tensor palati and azygos uvulæ: but this branch enters the former muscle at its tendinous part, while that of the pneumo-gastric and accessory, which his experiments indicate to be the real motor nerves of these muscles, enters the tensor in its belly.

*Nerves of the eighth pair.* Among the nerves most examined during the last year are the glosso-pharyngeal, pneumo-gastric, and accessory; on the offices of which observations have been lately made by Van Kempen,[§] Krause,[||] Bernard,[¶] Bischoff[**] and Hein.[††] The chief questions to be determined were—1st. Whether each or all of these nerves be composed at their origin of wholly sensitive, or wholly motor, or mixed, fibres? 2d. What muscles derive their motor nerves from each or either of them? The present state of the facts is as follows.

1. The *glosso-pharyngeal nerve* is, by general consent, chiefly sensitive; having filaments for both taste and common sensation. But it is probably, also, a motor nerve. Panizza, John Reid,[‡‡] and Longet,[§§] have maintained that it is not: having failed to discern movements in any muscle when irritating its roots within the skull, and referring the movements produced by irritating it outside the skull to filaments of other nerves mixed with it, or to reflex acts following the impressions conveyed through its centripetal fibres to the medulla oblongata. But other and more certain experiments are in favour of its having a direct motor influence. These include the experiments of Müller,[||||] Volkmann,[¶¶] and Hein. The last-named, whose experiments were very carefully performed, states that his results completely agree with those of Volkmann. When the roots of the glosso-pharyngeal nerve were irritated in the recently cut-off heads of calves and dogs, after removing the brain and medulla oblongata, and separating these roots

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[*] Dublin Medical Press, Dec. 6, 1843.

[†] Ibid. March 5, 1844.

[‡] Müller's Archiv. 1844, Heft iii-iv. See also his account of the nerves of the palate, p. 583.

[§] Essai experim. sur la nature fonctionnelle du nerf pneumogastrique; Louvain, 1842, 8vo; analysed by Bischoff in Müller's Archiv. 1843, Heft vi.

[||] Handbuch der menschl. Anatomie, Bd. ii, 1843.

[¶] Arch. Gén. de Méd., Avril et Mai, 1844.

[**] Müller's Archiv. 1843, Jahresbericht, p. clv.

[††] Ib. 1844, Heft iii, iv, pp. 297-358; from an inaugural dissertation, Heidelberg, 1843.

[‡‡] Experimental Inquiry, &c.; Edinburgh Medical and Surgical Journal, 1838, vol. xlix.

[§§] Anat. et Phys. du Système Nerveux, t. ii, p. 220.

[||||] Physiologie des Menschen, Bd. i, p. 639, Ed. i.

[¶¶] Ueber die motor.-Wirkungen der Kopf-und Hals-nerven. Muller's Archiv. 1840, p. 475.

from those of the pneumo-gastric, contractions always ensued in the stylo-pharyngeus muscle. He believes, also, that the terminal branches of the glosso-pharyngeal give motor filaments to the palato-glossus muscle, although he could not make it contract by stimulating either this or any other nerve; for glosso-pharyngeal filaments alone can be traced to this muscle, and its not contracting may be due to the disturbance of connexions by the dissections necessary for the experiment.

2. *Pneumo-gastric and accessory nerves.* The pneumo-gastric nerve is, by general consent, chiefly sensitive: but it is questioned whether the motor fibres, which many of its apparent branches contain, are derived directly from some of its own roots, or from those of the accessory, through its internal branch, which unites with the trunk of the pneumo-gastric soon after the formation of the jugular ganglion. The opinion that the roots of the pneumo-gastric are wholly sensitive, and those of the accessory wholly motor, and that the two bear to each other the same relation as the anterior and posterior roots of the spinal nerves, has been especially maintained by Valentin,[*] Longet,[†] and Morganti,[‡] following in the steps of Scarpa, Arnold, and Bischoff. But the experiments of all others, and especially those of more recent date, though they agree in few things besides, are all opposed to this opinion. Among these are the experiments of Müller,[§] Volkmann,[‖] John Reid,[¶] Stilling,[**] Van Kempen,[††] Bernard,[‡‡] and Hein,[§§] of which those of the last four must be included in the history of this year.

Stilling's experiments tend to show—1st, That irritation of the roots of the pneumo-gastric produces movements in the pharynx, glottis, stomach, (and heart): 2d, That irritation of those of the accessory nerve produces no movement in any of these parts: and 3dly, That irritation of the trunk of the pneumo-gastric, and of the superior and inferior laryngeal nerves, produces movements in the pharynx. He concludes from these and others that the fibres of the superior laryngeal nerve are (as to the larynx) wholly centripetal; those of the inferior laryngeal mixed, giving centripetal fibres to the trachea, and motor fibres to all the muscles of the larynx; and that the fibres of the internal branch of the accessory which joins the vagus are all centripetal.

Van Kempen's experiments on the roots of the pneumo-gastric and accessory agree with Stilling's, in showing that in the roots of the pneumo-gastric there are both sensitive and motor fibres; and that the accessory nerves give motor fibres to no muscles besides the sternomastoid and the trapezius. He concludes also that the pneumo-gastric nerve is the motor nerve of the constrictors of the pharynx, the palato-pharyngeus, the œsophagus, and the interior muscles of the larynx; and that irritation of its roots, as well as of those of the accessory, is wholly without influence on the movements of either the heart or the stomach. But he differs from Stilling, and agrees with all others, in holding that the superior laryngeal contains a few motor fibres, and that with these it supplies the crico-thyroideus muscle.

On the other hand, many others are agreed, against Van Kempen, that irritation of the pneumo-gastric does produce movements of the stomach, at least while digestion is going on; and in affirmation of this, Longet's experiments appear conclusive.[‖‖] And, as to the influence of the pneumo-gastric on the muscles of the palate, both Hein's experiments, presently to be mentioned, and Bischoff's,[***] agree that in domestic animals irritation of its roots produces movements not only of the palato-pharyngeus, but also of the levator palati and azygos uvulæ.

The experiments of M. Claude Bernard, on the roots of the pneumo-gastric and accessory, were made by seizing the accessory at its exit from the skull, and plucking it out by its roots.

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[*] De functionibus nervorum, p. 45.

[†] L. c. t. ii, p. 262, e. s.

[‡] See last Report, and Archives Gén. de Médecine, Novembre 1843, where his experiments are fully detailed.

[§] Physiologie, Bd. i, p. 641.

[‖] L. c.

[¶] L. c.

[**] Haeser's Archiv. Heft iii, 1842; and Report of the Scientific Meeting at Brunswick, in Müller's Archiv. 1843, Heft vi; Bischoff's Jahresbericht, p. cliv.

[††] L. c.

[‡‡] L. c.

[§§] L. c.

[‖‖] Bidder, in Müller's Archiv. Heft iv, 1844.

[¶¶] L. c. p. 322. They are lately confirmed by Bischoff, Müller's Archiv. 1843, Jahresber. p. clv; and by Stilling and Valentin, as far as the *fact*, but not the explanation, of the movements is concerned.

[***] L. c.

This mode of experimenting has the advantage of not rapidly destroying life; the animals lived for many days or weeks, till they were killed for the sake of the autopsy. But it is, even more than the others, subject to fallacy, in consequence of the frequent mingling of the fibres of the pneumo-gastric and accessory, before they leave the skull, as well, perhaps, as in consequence of the injury that may be done to the medulla oblongata.

The results of these experiments were—1st. That all the roots of the accessory are insensible, except those which arise from the medulla oblongata; these appear to have "a certain dose" of sensibility, and to have the more the nearer they are to the origin of the pneumo-gastric. The external branch of the nerve, which, with Morganti and others, he considers to be formed exclusively from its lower roots, is wholly insensible, till it has mingled with filaments of the cervical nerves. 2d. It is only from the upper roots of the accessory nerve that its laryngeal filaments are derived; when they are destroyed the voice is completely lost; when they remain the voice is not affected by the destruction of all the lower roots. 3d. The effects of the complete destruction of the roots of the accessory on both sides are, complete loss of voice, some difficulty of deglutition, shortness and interruption of expiration when the animal tries to cry out, panting during great movements and efforts, and sometimes irregularity of gait: but when the animal is at rest, respiration, circulation, and digestion are performed as perfectly as in health. 4th. It is hence evident that the accessory nerves do not furnish all the motor filaments to those parts to which the branches of the pneumo-gastric nerves are distributed, and it is made probable that they furnish very few, if any, filaments to the organs below the upper part of the œsophagus.

[In Longet's experiments of galvanizing the trunk of the accessory no movements of the stomach, trachea, bronchi, or heart were ever seen; and M. Bernard justly observes, that it is hardly imaginable that so small a branch as the internal branch of the accessory should supply filaments to be distributed in all the parts to which motor influences are conveyed through the branches of the pneumo-gastric.]

5th. It is, further, made nearly certain that the accessory nerves do not supply all the motor filaments of the larynx and pharynx. For, as regards the larynx, the effects of the division or destruction of the accessory nerves, are very different from those of dividing the trunks of the pneumo-gastric nerves below their junction with the internal branches of the accessory. The latter operation completely paralyses the muscles of the larynx, and young animals die at once suffocated by the closure of the glottis; by the former, the voice is destroyed, but quiet respiration is performed with ease, and when the larynx is exposed, the glottis, though it remains widely open and is nearly immovable, yet moves as much as it does in ordinary quiet respiration, and the animal's life is hardly endangered. 6th. It is not experimentally determined what largyngeal muscles, besides the crico-thyroid, in which paralysis was proved, are paralysed by destroying the accessory; but the power of closing the glottis is lost, and vocalization is impossible. Consequently, since the power of keeping the glottis open against the influence of the atmospheric pressure in respiration, is not lost, (as it is when the pneumo-gastric are divided,) it is presumable that the arytenoid, the thyro-arytenoid, and the lateral crico-arytenoid are also more or less paralysed, while the posterior crico-arytenoid retain their power.* 7th. With regard to the movements of the pharynx, the animals which had lost their accessory nerves, after eating, perhaps, rapidly for a time, were obliged to eat slowly, stopping and raising the head at each effort of deglutition; and if they were hurried, portions of food often passed into the larynx. [This may most probably be ascribed to the partial paralysis of the muscles of the pharynx, but M. Bernard supposes that as the larynx has, in his opinion, both a vocal and a respiratory motor nerve, so also the pharynx has some branches from the pneumo-gastric for the simple movements of deglutition, and some from the accessory nerves for those movements by which in deglutition the glottis is closed. The conclusion is improbable, and the experiments show that there were difficulties in deglutition, independent of the non-closure of the glottis.]

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* M. Bernard strangely misinterprets his facts to support an hypothesis that the accessory nerves are the special *vocal*, and the pneumo-gastric the *respiratory* nerves of the larynx. But coughing is no vocal act; yet it is impossible when the accessory nerves alone are divided, because the closure of the glottis is not possible. M. Bernard says nothing definite about coughing, or any similar complex respiratory act; but, no doubt, the interrupted efforts of expiration of which he speaks were attempts at coughing, not recognised because the glottis was not closed and there was no explosive noise.

8th. By the division of the external branch alone of the accessory nerves no effect was produced on the voice or deglutition, but the animal was put into the condition of a *short-breathed* person; its cries became short and interrupted; it was quickly *blown* when it made violent muscular efforts, and when the respiration was hurried; there was sometimes imperfection in the movements of the fore limbs. Of these effects the shortness of the cry is ascribed, by M. Bernard, to the loss of power in the sterno-mastoid and trapezius muscles, by the contraction of which the descent of the sternum and upper ribs is for a time hindered in healthy vocal expiration. In like manner, the paralysis of these muscles (and of others dependent for fixed points on parts to which they are attached) hinders the fixing of the walls of the chest which is necessary for efforts. 9th. But the paralysis is not complete. M. Bernard relates an experiment in which, after division of the external branches of the right accessory nerve, both sterno-mastoid muscles contracted with equal force in forcible respiration, but the left alone contracted when the animal cried out.*

Hein's experiments relate almost exclusively to the nerves of the palate. They consisted in irritating the roots of the several nerves within the skull of an animal just beheaded, after removing the brain, so that there was very little danger of a part of one root being mistaken for another. His conclusions regarding the motor fibres of the glosso-pharyngeal are already mentioned. As to those of the pneumo-gastric and accessory nerves, they tend to show that these nerves send branches, through the medium of the pharyngeal branches of the glosso-pharyngeal, to the levator palati, azygos uvulæ, and palato-pharyngeus. These branches, near their distribution, are almost too minute for dissection; their existence was proved chiefly by the results of the experiments, which at last guided to the detection of them running just under the mucous membrane to the muscles. But he does not pretend to distinguish between the effects (on the muscles of the palate,) of irritating the pneumo-gastric and the accessory; he believes that their fibres are from the roots mingled, and that they both influence all the muscles supplied from the branches of either.

[From all these facts the first conclusion must be, I think, that the precise functions of these nerves are not yet determined. The most probable account may be—

1. That the glosso-pharyngeal is chiefly the nerve of the sense of taste, and, in a less degree, a nerve of common sensation.

2. That the glosso-pharyngeal is, according to the experiments of Müller and Hein, the motor nerve of the stylo-pharyngeus, and probably, also, of the palato-glossus. The branches which it gives to the digastricus, stylo-hyoideus, and constrictors of the pharynx, appear, according to the experiments, to be sensitive, or else derived from the facial and accessory nerves, with which it has previously united.

3. The pneumogastric is, from its origin, composed of both sensitive and motor fibres. But it cannot be decided at present, whether it alone supplies any particular muscles; or whether, in all its muscular branches, and especially in those given off above the œsophageal, there are filaments from the accessory as well as from its own roots.

4. The accessory nerve contains in all its lower roots motor fibres alone; in its upper roots it is not improbable that there are some sensitive fibres also. It is

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* Hence he supposes that these muscles, and the trapezii, like those of the larynx, have a vocal and a common respiratory function, and a separate nerve for each; so that while they act as common inspiratory muscles under the influence of the cervical nerves, they arrest the respiratory acts when they are under the influence of the accessory nerves. He would, therefore, call these nerves the antagonist rather than the accessory nerves of respiration.

a motor nerve of the sterno-mastoid and trapezius muscles; and it is very probable that it gives, by its internal branch and other communications, motor fibres to the pneumo-gastric, from which they are subsequently distributed to some or all of the muscles of the larynx,[*] and pharynx; and, in some animals, to muscles of the palate.

It is evident that the chief difficulty is in distinguishing the functions of those roots which may be either the uppermost roots of the accessory, or the lowest of the pneumo-gastric. In the last Report an observation by Mr. Spence of a root which he considered to be the motor root of the pneumo-gastric was mentioned. That root had its origin midway between the pneumo-gastric and the accessory roots; and both Krause and Hein agree that it is not unfrequent to find that several of the upper roots of the accessory (as they are usually described,) are united to and interchange filaments at the jugular ganglion of the pneumo-gastric. In a preparation which I lately made, several of these minute roots are commingled with roots of the pneumo-gastric, even before the ganglion is formed on it. It is therefore difficult to say whether these are roots of the pneumo-gastric or of the accessory; and the more difficult, because the upper roots of the accessory arise more and more nearly from the posterior columns of the medulla oblongata; and, moreover, whatever these roots may be, such communications as I have observed might effect an exchange of filaments between the two nerves before their trunks are formed. It is probable, also, that there are differences in these points in different species, and in different individuals of each; so that before we can hope to distinguish precisely the physiological properties of these two nerves, we must learn to distinguish them (if indeed they are two nerves,) anatomically.]

*Inferior laryngeal nerve.* Mr. Jackson[†] has recorded a case of aneurism of the distal two thirds of the arch of the aorta, in which the left inferior laryngeal nerve was involved, and a firm manly voice was changed to a squeaking whisper. Severe paroxysms of dyspnœa ensued on exertion, and sometimes during swallowing—signs referable to paralysis of all the muscles of the left side of the larynx, except the crico-thyroidei and thyro-hyoidei, by the unopposed action of which the vocal ligament was kept unnaturally tense, while in violent inspiration the arytenoid cartilage was not hindered from being, as in Dr. J. Reid's experiments, forced down like a valve over the glottis.

Professor Barkow[‡] (Breslau) describes a small ganglion, scarcely a line in diameter, on that terminal branch of the inferior laryngeal nerve, which after ascending over the posterior surface of the cricoid cartilage lies upon or among the fibres of the posterior arytenoid muscle. He calls it the arytenoid ganglion

ulnar nerve.

Dr. Poletti[§] finds that another branch of the deep palmar branch of the ulnar nerve, constantly exists in addition to those described by former anatomists. It is as large as the filaments given to the lumbricales muscles, and arises from the concavity of the arch which the nerve forms, opposite the lower margin of the os unciforme, or a little further on. After giving off a few secondary branches, when it is opposite the articulation, between the os unciforme and os magnum, it passes through the interosseous ligament, and goes to be distributed in the synovial membrane of the metacarpal joints.

### ORGANS OF THE SPECIAL SENSES.

*Eye.* M. Maunoir,[‖] of Geneva, to support the view which he has so long maintained of the existence of the sphincter muscle around the pupil, and the radiated muscle in the rest of the iris, states that galvanism excites contraction of both these muscles, and that in a recent case of accident he had an opportunity of observing their antagonist action. A man received a small penetrating wound through the lower part of the cornea, and a point just higher up in the iris. When the cornea healed, a triangular false pupil was found at the wound of the iris. Both this and the natural pupil could contract and dilate; but, on the contact of light, the false pupil dilated and enlarged when the natural one contracted, and the false pupil contracted when, in the absence of light, the natural one was dilated. [The result of a number of observations in cases of artificial pupil, wounds of the iris, &c., by E. H. Weber,* went to prove, that the movements which occurred could not be explained by supposing that the iris has circular or radiated fibres, or both, but only by believing that its irritable part consists of fibres variously woven together without any definite direction.]

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[*] The arrangement of its internal branch in the chimpanzé, discovered by W. Vrolik, (see last Report,) is very important evidence for this view; and Bernard's experiments are not less so, for in them he could not destroy much more than the roots of the accessory, though he may sometimes have left some of them uninjured.

[†] Medical Gazette, Dec. 22, 1843.

[‡] Report from the Académie des Sciences, Sèance du 26 Août, In the Gaz. Médicale, 31 Août 1844.

[§] Il filiatre Sebezio, Dec. 1843. It is probably the same which Valentin describes as "filaments to the articulation." (Soemmering's Anatomie, Fr. edit. vol. iv, p. 517.)

[‖] Report from the Académie des Sciences, 19 Fevr. 1844; In the Gazette Médicale, 24 Fevr.

A good discussion of this subject has been published by Dr. C. R. Hall.† He considers that the iris has a circular muscle for the contraction of the pupil; that the dilatation of the pupil depends, probably, on the cellular tissue or the blood-vessels of the iris having an unusual vital contractility; and that the only effect of the elasticity of the tissues of the iris is to accommodate it to changes of size, and to restore it from extremes to a medium state—i. e. to the size which it usually has after death.

Valentin‡ has found, in two rabbits, that four months after the extraction of the lens, a new body has been produced smaller than it, yet presenting, to microscopic examination, the peculiar cells and fibres of the natural lens in stages of development similar to those through which they naturally pass. These were mixed, however, with minute granules; their arrangement was not quite regular in all parts; and in both cases there was at the lower part of the new lens, opposite the injured part of the capsule, a yellow turbid portion formed of a finely granular substance quite different from lens-substance. In both cases the capsule of the lens was transparent, without any trace of blood-vessels. The appearances indicated that the new lens was formed from cytoblastematous substance oozing into the emptied capsule, and that thus its harder central parts were those which had been longest engaged in development, and were most perfect. Ernst Brücke§ has pointed out an ingenious mode of demonstrating the structure of the vitreous humour, derived from the fact that when two solutions which will precipitate each other, permeate, or are imbibed in, membranous septa, the precipitate first forms in and upon the membrane. By placing the vitreous humour of an eye cut vertically and transversely behind the lens in a concentrated solution of acetate of lead, he found its surface soon covered with a white substance, and when, some hours after, a portion was cut off from the posterior part, the section was seen marked by fine milk-white streaks, which were edges of layers of which the outermost lay parallel to the retina, the innermost parallel to the posterior surface of the lens. The distances between the streaks were greatest in the axis of the eye, and became less towards the zonula, where they were about $\frac{1}{250}$ of an inch apart. The margin of the layer appeared to be connected with the hyaloid membrane near the zonula, but in what way could not be determined. The vitreous bodies thus treated with lead separate more easily in the direction of the layers than in any other.

*Eyelids.* Dr. Zeis‖ has found that the eyelids of young animals born blind (and probably, also, those of the human fetus in utero,) are held together by a thin layer of gelatinous substance, which is interposed between their adjacent margins, and bleeds when torn across very soon after birth. Every day after birth this layer (displayed by vertical sections through the eyelids,) becomes thinner; at the same time, the fissure between the eyelids grows deeper, making progress from before backwards, as if by the gradual eversion of the skin of their adjacent margins; and after the first day, vessels are not detected in the intermediate substance by either bleeding or minute injections.

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* Hildebrandt's Anatomie, Bd. iv, p. 80.

† Edinb. Med. and Surg. Journal, July 1844.

‡ Oesterreichische medic. Wochenschrift, Fevr. 10, 1844; from Henle and Pfeuffer's Zeitschrift 1843, Bd. i, Heft ii.

§ Müller's Archiv. 1843, Heft iv, p. 344. Pappenheim (Specielle Gewebelehre des Auges, 1842, p. 182,) said that the vitreous humour, when treated by carbonate of potass, "may be stripped in concentric layers almost like a bulb;" but did not demonstrate any of these layers of membrane.

‖ V. Walther and V. Ammon's Journal für Chirurgie, Bd. ii, St. ii.

*Lachrymal gland.* M. Gosselin,[*] after numerous attempts to inject mercury into the lachrymal ducts, has made himself nearly sure that there are only two ducts which go to the principal mass of the gland, and that the other six or eight adjacent apertures in the conjunctiva are the orifices of ducts belonging to as many isolated small glands, which form what some have described under the name of the palpebral portion of the gland. Some only of these smaller glands appear to have ducts which open separately; the ducts of others open into one of the larger ducts. By the existence of these separate portions, M. Gosselin explains the fact that after removal of what was supposed to be the whole lachrymal gland, some secretion of tears has still continued, and the eye has not lost its brilliancy; tears being secreted by the remaining small glands.

*Tongue.* Mayer[†] has published many brief notes on the comparative anatomy of the tongue, from which he deduces that papillæ exist on it, not in mammalia alone, but variously developed in birds, amphibia, and fish; and that the varieties of form which the papillæ present are due to the various arrangements of the same elementary clavate or fungiform shape. He thinks that all the papillæ in the human tongue may be organs of taste; and that those which are so chiefly are the smaller ones most thinly invested by epithelium. He says the hypoglossal nerve has often in man, and generally in horses, from one to three ganglia; and that in *many* mammalia it has a posterior ganglionic root.

### STRUCTURE AND FUNCTIONS OF THE GENITAL ORGANS.

*Male genital organs.* In an excellent treatise by Dr. Kobelt,[‡] the following descriptions are chiefly worthy of notice. 1. Before uniting with the other, each crus penis enlarges into a bulb-like swelling, the *bulbus corporis cavernosi penis.* The arteria profunda penis sends a special branch into this bulb; in which also, the divisions of this branch diverge, one backwards to the apex of the crus penis, the other forwards to anastomose with the trunk of the A. profunda penis. 2. The A. profundæ of the two sides form an anastomotic arch near the junction of the crura penis, and it is from the convexity of this arch that the A. corporis cavernosi of each side is given off. 3. Among the veins of the corpus cavernosum, several ascend from the groove between it and the anterior part of the C. spongiosum to the V. dorsalis penis; and others of the same kind, coming out from the groove nearer the pubes, ascend to the abdominal cutaneous veins. 4. The posterior part of the bulb of the C. spongiosum urethræ exhibits, more or less distinctly, two lateral hemispheres, (the representatives of the completely divided bulb of the marsupials,) which are separated by a narrow fibrous partition gradually ceasing as it proceeds forwards. And above and between these in the middle line it has a third lobe (*colliculus bulbi*), through which pass the membranous part of the urethra, the vessels of the bulb, Cowper's gland-ducts, &c. 5. The erectile tissue is continued from the bulb, in a less developed form, round the membranous and prostatic parts of the urethra into the neck of the bladder. It is well-developed in the caput gallinaginis, which probably serves, in its erect state, to prevent the reflux of semen into the bladder. 6. The artery which runs forward in the upper part of the corpus spongiosum to the glans is usually a branch of the pudic, not of the artery of the bulb. 7. Among the many veins proceeding from the C. spongiosum are a set which pass in two rows through its upper part, emerge from the groove between it and the C. cavernosum, run downwards and unite in a plexus with scrotal veins, from which their blood is carried to the inguinal cutaneous and other veins. 8. The fibres of the M. bulbocavernosus are in three sets. The superficial posterior three-fourths of them end in a tendinous lamella which insinuates itself between the crus penis and bulb, and then passing over the latter, unites with its fellow; so that this part of the muscle surrounds the bulb, and will compress it from below upwards, and from behind forwards. The anterior superficial fibres have a similar thin tendinous layer which winds over the side of the C. cavernosum, and unites with its fellow over the dorsal vessels and nerves; and the fibres of this division will compress not only the anterior part of the bulb, but the body of the penis and its dorsal vessels. The third or deep set of fibres immediately cover and surround the hemispheres of the bulb, like a muscular hood, and form their proper compressor. 9. The M. bulbo-cavernosi serve especially to maintain and increase the turgescence of the glans both by retarding the current in its veins and accelerating that in its arteries. The arrangement just described enables their contracting fibres to compress all the veins returning blood from the glans. There is also a peculiar excito-motor connexion between them and the nerves of the glans, *provided* the latter be first made irritable by a partial turgescence of the vessels of the glans. If, in a dog just strangled, the glans be irritated, the bulbo-cavernosi twitch responsively, and sometimes make a rhythmical succession of contractions; and in each contraction the blood is forced from the vessels of the bulb in a rapid jet through those of the corpus spongiosum into those of the glans, which is thus each time made tense and glistening. A similar contraction of the muscles may be felt in the perineum of the dog during copulation. By the increased turgescence of the glans, the subjective sensations of its nerves is in turn increased, and thus the sensitive glans and the irritable muscular apparatus of the bulb are mutual and alternate excitors of each other. 10. The ischio-cavernosus is a hollow or bivalve-shell-shaped muscle, which covers the whole free surface of the crus penis and its bulb; its contraction, by compressing all the blood within the crus, increases and completes the turgescence of the C. cavernosum. These muscles, also, contracted with the bulbo-cavernosi as often as the turgid glans of the strangled dog was irritated; and probably in all cases the two pairs of muscles act together to increase the turgescence of the whole penis.

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[*] Arch. Gén. de Méd. Octobre 1843.

[†] Ueber die Zunge als Geschmacksorgan, in the Acad. Nat. Curios. vol. xx, p. 723.

[‡] Die männlichen und weiblichen Wollustorgäne des Menschen, &c.; Freiburg, 4to, 1844.

*Female genital organs.* In the female organs, Dr. Kobelt shows the exact analogy of the glans clitoridis to the glans penis, in more respects than are usually considered. As the analogue of the bulb he demonstrates a leech-shaped venous plexiform mass attached on each side to the ramus of the pubes, and covered by the (so-called) constrictor vaginæ muscle, the analogue of the bulbo-cavernosus; and for the analogue of the corpus cavernosum, he describes a venous plexus (*pars intermedia*) connecting the veins of each part of this bipartite female bulb with the veins of the glans clitoridis. But for the full account of these and for some more interesting matter, the book itself must be referred to.

*Uterus.* Dr. Pappenheim[*] has published a very minute description of the arrangement of the muscular fibres of the uterus, of which it is impossible to give a short intelligible account. For this reason alone it is that I thus pass over both it and the elaborate 'Contributions to the Physiology of the Human Ovary,' by Dr. Ritchie,[†] as well as the essays on the same subject by Dr. Knox.[‡]

*Gestation.* It is stated to be the result of researches (but no details are given) by M. Berthold,[§] that after healthy gestation, delivery takes place at the time when the tenth menstruation from the time of conception should occur; in other words, when the ovary is preparing for the tenth menstruation. And hence, according as the periods of menstruation are in each case at all more or less than the ordinary time of four weeks apart, so in each case will the period of gestation be in the same proportion longer or shorter than usual. Consequently, the most probable estimate of the duration of gestation would be the number of days that elapsed during the last preceding ten menstruations.

## PHYSIOLOGY OF THE OVUM AND EMBRYO.

*Separation, transit, and impregnation of the ovum.* In further evidence of the separation of the mature ova in mammalia independent of impregnation or copulation, M. Bischoff[||] has added to his observations recorded in the last Report, some which are, perhaps, yet more convincing. For example, a ewe, which had never copulated, was killed twenty-four hours after the beginning of heat, and Bischoff found a Graafian vesicle ruptured in the right ovary, and the ovum in the oviduct nearly half an inch from its ovarian orifice. He cut out the left ovary of a bitch that was in heat, but had not yet copulated, and found Graafian vesicles unopened in it: five days afterwards, no copulation having been permitted, he examined the right ovary, and found four well-marked corporea lutea and the four ova far advanced in the oviduct. Similar observations were also made on a sow, and on a rat.

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[*] Vorläuf, Mittheib. über den Verlauf des Muskelfasern in der schwangern menschl. Gebärmutter in Roser u. Wunderlich's Archiv, and Schmidt's Jahrbucher, Mai 1844.

[†] Medical Gazette, Dec. 22, 1843, to June 14, 1844.

[‡] Ibid.

[§] Report of the Académie des Sciences, Seance du 27 Mai. Arch. Gén. de Méd. Juin 1844.

[||] Beweis der von der Begattung unabhängigen periodischen Reifung und Loslösung der Eier; Giessen, 1844. Translated in the Annales des Sciences Naturelles, Août 1844; and by Mr. Henry Smith, in the Medical Gazette, Jan. 3, 17, &c. 1845.

Dr. Ziegler* has proved that the rut of the roe is in July or August. At this time also he has found ova in the tubes; they are at the beginning of the tube towards the end of August, and at the end of it about the beginning of November. In December they pass into the uterus; on the 16th he found them as vesicles from ½ to 1½ lines in diameter; on the 26th the diameter was six lines. The smallest embryos were found in the beginning of January, ¾ of an inch long; in February, 2 inches; in March 6 inches long. The whole period of gestation is 40 weeks, of which three months are thus spent in the passage through the tubes. It is only from April to November that spermatozoa are found in the bucks.

Some observations by Professor Czermak† on the development of the black salamander (salamandra atra,) have interest in regard to human physiology, and especially among them these three: 1. After impregnation a certain number of ova are found in the posterior portion of each oviduct, of which one on each side is developed; but while this development is going on, a certain number of ovules grow and are developed in the ovaries: and these, after the discharge of the two young salamanders formed from the first set, pass in their turns into the oviducts, and, without a second impregnation, are developed into a second pair of young ones. Thus there is what the author calls *an incomplete super-fecundation:* a single impregnation causes two sets of ovules to be in distinct periods developed. 2. Of the ovules which pass in each period into the oviducts (or uterine horns,) although all are at first alike, yet only that one which lies on each side nearest to the cloaca is developed into an embryo; the others (*embryonotrophic ovules*), together with the albuminous envelopes which they acquire in their passage into the uterus, are fused into a pulpy, dirty-yellowish, and ropy substance, in which the elements of their yelks may be discerned. And it is on this substance that the embryo, after consuming the yelk of its own vesicle, is supported. So long as the embryo is retained in its own membranes its intestine (a simple straight pouch) is pretty full of its own yelk; but after a time it makes its way out of its membranes, and its stomach is now found distended by the yelk-substance which it has swallowed, while the greater part of the intestinal canal is empty. 3. By the time that nearly the whole of the yelk-substance in which the embryo was immersed has been consumed by it, the branchiæ have obtained the highest stage of development; and the author believes that they now serve for the absorption of a nutritive fluid, secreted from the closely adjacent vessels of the uterus, which are developed into a long-meshed network.

*Development in general.* MM. Prevost and Lebert‡ have published sundry observations on the development of the ovum of the frog, with the view, chiefly, of illustrating the development of the organs of the circulation in the batrachians and birds. In their account of the contents of the ovum before and soon after impregnation they accord with Reichert, but their account is more circumstantial. They describe the ciliated surface of the young tadpole, and the ciliæ as not set on any peculiar epithelium-cells; the pigment-cells, formed from primary-cells,

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* Beobachtungen über die Bremst und den Embryo der Rehe, Hannov. 1843. Abstract in Müller's Archiv. 1844; Jahresbericht by Bischoff, who generally confirms the account.

† Oesterreichische Medicin. Jahrbucher, Oct. 1843.

‡ Annales des Sciences Nat. Avril 1845. Possibly there is more of novelty in this paper than I have stated; but the account given is obscure, and is made the more so by the adoption of new names, and the avoidance of any reference to those by which others have called the same things. In a following number of the Annales is a paper of the same kind, on the development of the chick. See also the remarks by Vogt on the former paper in the same Journal. July, 1844.

(the "smaller predisposed vitelline-cells" of Reichert, the "organo-plastic globules" of Prevost and Lebert,) of which some, in the pigmentum nigrum, retain their form, and others become star-like, and form canal-communications; the development of muscular fibres from similar cells elongating themselves in groups, and having their granules developed into muscular filaments; and the development of the chorda dorsalis. In regard to the development of the blood-corpuscles they confirm the account of Baumgärtner, Schultz, Reichert, and Bischoff, that in the frog, they are formed, like the tissues, out of the smaller vitelline-cells, which gradually pass from the round to the oval form, have their contained granules resolved, and acquire the red colouring matter. The development of the heart is described as by Reichert and others; and in the first formation of blood-vessels, they believe that the cells and other constituents of the tissue in which they are to be formed separate so as to leave the spaces which are to be occupied by the vessels. The capillaries, they add, are never formed independently of the general circulation, but always centrifugally under the influence of the circulation, by arches passing from a minute artery to a corresponding vein.

*Development of the tissues. Of bone.* Bidder* has given a minute account of the development of bone, from examinations of the long bones of kittens just born. In vertical sections, he finds just below the synovial membrane on the head of the bone, six or eight layers of the usual flattened cartilage-corpuscles; below these is a layer of cells of irregular shape and size, irregularly and thinly scattered in the intercellular substance, with clear, dark outlines, and finely granular contours; nearer the ossified part the corpuscles are almost all oblong, larger, proportionally more numerous, and they have more distinct granules, which in some have assumed the form of distinct nuclei. After these, in the layer immediately adjacent to the bone, the corpuscles, as Miescher showed, are arranged longitudinally in rows vertical to the ossified surface; they are oblong, with their long axes transverse to the direction of the rows, and in the several rows are very closely set. The smallest of them retain their finely-granular or grumous contents, and appear opaque and jagged, or crenate at their margins; others, and these always the larger, are clear and contain bright nuclei. The last layer of cartilage next the bone is further distinguished. The rows of corpuscles are less regular. (The nuclei and the contents of the cells are so alterable that they must be examined directly after death, especially in young animals.) The corpuscles, as in the previous row, may be divided into two kinds, and they occupy three-fourths of the whole substance. Some are large cells with one, two, or three clear distinct nuclei, and are either oblong or tolerably round or angular, with, sometimes, a double contour. Their nuclei also contain from one to four nucleus-corpuscles. The cells of this kind are formed by the gradual fusion of two, four, or more of the clear corpuscles last described, which when they first coalesce, form dentated dark corpuscles with granular contents, but gradually clear up, become rounder, obtain the distinct double contour, and the one or more nuclei; that is, from the conflux of several cartilage cavities, there are formed complete cells with nuclei and nucleoli. Others of the corpuscles at this part have opaque granular contents and irregularly crenated edges, and agree pretty nearly with the crenate-cells before mentioned; and these may sometimes appear to be inclosed in cells of the same kind as the clear nucleated ones last described; but they are certainly distinct and independent.

In the ossified part it is clear that the ossification first makes progress in the intercellular substance between the vertical rows of cells, and then passes transversely between them, so as to form cancelli, each of which incloses one or more of the true enlarged and nucleated cartilage-corpuscles; while the dentated corpuscles are themselves inclosed in the deposits and impregnated with the calcareous matter. (In different specimens, however, the degrees of regularity of the arrangement of these cartilage-corpuscles are very uncertain, and many must be examined to afford the complete view.)

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* Müller's Archiv, Heft iv-v, 1843.

It thus appears that of the original cartilage-corpuscles, some are developed and some retrograde. The former increase to three times their original size, at first by growth, and at last by coalescence; their walls, at first not distinguishable from the intercellular substance, become thicker and more distinct, crenated, and then round with a double contour; their contents, at first clear, become turbid and granular, and then again clear, with distinct nuclei and nucleoli; they arrange themselves in regular rows, and seem to grow at the expense of the intercellular substance.

The latter (retrograding) corpuscles are those which do not attain a higher grade than that of the dentated and crenated corpuscles; they are smaller than the former, their dark granular contents give no indication of the formation of new cells, they do not grow, and at last are ossified together with the intercellular substance.

The intercellular substance does not in these changes remain unaltered. Before ossification, it becomes laminated in the large-celled layer of cartilage immediately adjacent to the ossified part; and this laminar arrangement is the forerunner of the osseous lamellæ, which in a later stage surround the vascular (Haversian) canals. These vascular canals are unquestionably produced by the fusion of the cancelli formed from the more perfect cells: they are not derived from canals previously formed in the cartilage, but result from the absorption of the partitions between cancelli, of which some lay in longitudinal, others in oblique or transverse rows. The canals in cartilage, from which those of bone were supposed to be formed, are far from constant in ossifying cartilage, even when ossification has made much progress, and when they do exist they scarcely ever reach so far as the ossifying part, but stop short near its surface.

The other kind of corpuscles, the small dentated ones, become the bone-corpuscles as earthy matter is deposited all around them; and the author inclines to Henle's view, that the *canals of the corpuscles* are formed as *intercellular spaces* in substance deposited in laminæ within the corpuscles. But in a note appended to the paper, Müller says that in enchondroma he has often seen the transition from the nucleus of the distinct cell into the toothed and branched nucleus. So that, as Bidder himself admits, this part of the subject must be still very doubtful.

*Development of arteries.* H. Rathke[*] has published a very complete account of the development of the arteries which proceed from the arch of the aorta in mammalia and man. His examinations were made on embryos of pigs, sheep, and oxen.

When the pharyngeal (or branchial) fissures are still open, the heart lies behind and below them; its single ventricle is continued anteriorly into a single canal, which corresponds with the trunk of the branchial arteries of fish, but has no bulb; this, as it passes forwards, gives off or divides into five arterial arches on each side, of which four pass between the pharyngeal fissures, and the fifth passes behind the last fissure. Above the fissures all these arches unite into one aorta, which thus, as in fish, arises with two divided roots from each side, and is continued down the vertebral column.

When the ventricular septum has formed, the single trunk proceeding from the originally single ventricle also divides into two trunks, partitions continuous with that of the ventricle growing from opposite parts of its walls and uniting within it. Of these two trunks, the right passes at its further end rather behind the left; and when the partition between them is completed, the left trunk appears as the ascending aorta, the right as the trunk of the pulmonary artery, which, enlarging at its lower (or proximal) part forms the *conus arteriosus*, and here constitutes a part of the heart itself. No similar enlargement of the aorta ever takes place.

But before these changes are finished, it is found that of the five arterial arches on each side, the anterior pair (the most distant from the heart) disappears almost entirely: but the proximal portion of each of these arches, from which there is already given off a branch to the brain, remains; and the remnant of the trunk, together with this branch, now appears like a branch from the second arch. A little later the second pair of arches also disappears, their proximal portion only remaining; and the same is soon repeated with the third pair of arches. Thus, there now remain only the fourth and fifth pairs of arches, and a vessel formed on each side out of parts of the first three pairs, which looks like a branch given off from the enlarged and now more divergent fourth pair. This vessel is the common carotid; it is S-shaped, having a proximal curve turned towards the mouth, and a distal curve directed backwards; a branch is given off from it near its origin, and passes to the anterior fissure, where the ear is formed. This branch is the facial (external) carotid; the continued trunk, including the branch before mentioned as given off from the first arch, is the cerebral (or internal) carotid.

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[*] Müller's Archiv, Heft iii-iv, 1843.

All the fissures, except the anterior, are now closed; the partition of the single arterial trunk from the heart is soon completed; and at length the fourth and fifth pairs of arches having increased greatly in size and strength, the right ventricle sends all its blood into the fifth pair, the left into the fourth pair and the carotids.

The present condition of parts, therefore, is this. 1. The trunk from the left ventricle divides into two branches, which go to each side, and ascend arching upwards and backwards, then run converging for some distance further backwards, and, between the œsophagus and vertebral column, pass at an acute angle into the trunk of the (descending) aorta. Of these branches, the right is, in its whole length, but especially towards its distal end, smaller than the left, which is to be developed into the arch of the aorta, and its convex portion lies a little further forwards than that of the left does. Each of these branches, also, at some distance from its origin, gives off a carotid branch. 2. The current from the right ventricle, passing into the trunk of the pulmonary artery, in like manner divides into two branches, which ascend arching upwards and backwards, and of which the right is smaller and rather more anterior than the left. Both these branches are placed behind those of the former trunk, into which, at their distal ends, they pass at an acute angle, and than which they are rather smaller.

The fifth arch, on the left side, now gives off a branch which goes backwards to the lungs, and ramifies in them. This branch becomes the distal half of the trunk of the pulmonary artery; the proximal part of the same left fifth arch becomes the proximal half of the pulmonary artery; and the distal part of the arch (that part which is beyond the branch) becomes the ductus arteriosus. The fifth arch of the right side gives off no such branch, and gradually wastes away.

The vertebral arteries arise very early from the distal part of each fourth arch just before it passes into the dorsal aorta: that of the left side arises just before the junction of the ductus arteriosus with the fourth arch. They run up on the six upper vertebræ, and soon became inclosed in short double processes (the cervical transverse processes) which unite, first together and then with the vertebræ, and form foramina. On the left side the vertebral artery sends off a branch which goes far backwards to the anterior extremity, and constitutes the distal half of the left subclavian artery, of which the proximal half is afterwards formed by the lower part of the vertebral enlarging so much, in correspondence with the development of the anterior extremity, that its upper half appears like a branch from it. The right subclavian is given off as a branch from the distal half of the right fourth arch, at some distance beyond the origin of the right vertebral from the same. It also bends far backwards to reach the right anterior extremity.

The part of the fourth arch on the right side, which lay beyond the subclavian branch just mentioned, next wastes away, and the rest of this arch, having grown less than the corresponding arch on the left side, with which it is connected at their common origin from the aortic trunk, now assumes the appearance of an arteria innominata given off from the commencement of the left fourth arch. This left fourth arch, together with the aortic trunk, thus becomes the proper arch of the aortic, giving off, first, the innominata, then the left carotid, and then the branch from which the left vertebral and subclavian are derived.

After this, probably, the only important alterations which take place in the human embryo, are the change in the direction of the subclavian arteries as the heart retreats further into the cavity of the chest, the elongation of the carotids in correspondence with the growth of the neck, the enlargement of the common trunk of the left subclavian and left vertebral, so that the former, which at first appeared like a branch of the latter, now appears like a trunk giving it off, and the elongation of that part of the arch of the aorta which lies just before the origin of the left subclavian.

In the embryos of the mammalia which were examined, further changes effect the coalition of the three branches from the arch of the aorta into two or one; and the plan of these changes is pointed out at the end of the essay.

*Development of the nervous system.* From Bischoff[*] we have some further observations on the development of the nervous centres, which confirm his own and V. Baer's former descriptions, and add to them some interesting minute details. In the examination of four ova, from a bitch which had conceived three weeks previously, he found, in the first, the dorsal laminæ formed by accumulations of formative substance on each margin of a groove (the *primitive groove* or *streak*) which lay in the long axis of the pyriform germinal area, and was not covered in by even the most delicate membrane. In the second and third ova which were removed from the living uterus twenty-four hours after the removal of the first, the groove was still open, although the rudiments of six vertebral arches were formed in the dorsal laminæ on each side of it; at the head-end its margins were separated in three successive dilatations, in the middle they were nearly in contact, and at the tail-end they had a lancet-form; and, which was most interesting, the inner borders of these dorsal plates, and thus the inner layer of the substance forming the primitive groove, presented distinctly the transparent aspect of nervous matter. In a fourth ovum, removed from the uterus twelve hours later, the groove was almost all closed in, and the borders of the nervous matter having united along almost their whole length, presented the appearance of a medullary tube, dilated and bent downwards anteriorly, and having the sacculi for the eyes considerably developed.

The conclusion, therefore, is that of the substance which accumulates by the sides of the primitive groove, and forms the dorsal laminæ, the inmost layer forms the nervous tube which is the rudiment of the central nervous system; that the rest of this substance is developed into the dorsal part of the trunk; and that the nervous substance is formed even before the closing in of the groove.

*Respiration of the embryo.* The researches of MM. Baudrimont and Martin St. Ange[†] on the chemical changes produced in the incubation of the eggs of birds have shown that in all cases oxygen is absorbed and water and carbonic acid are given off by the eggs. The evolution of these substances appears essential to the progress of development; and they are probably derived from the combustion of carbon and hydrogen within the ovum. The quantity of carbonic acid which is given off increases with the period of impregnation; that of water is nearly the same at all the periods. From this combustion moreover eggs must have a proper temperature independent of that communicated by the mother, and the authors suggest that it might have been in part the source of the increased heat (amounting to from 12 to 19° above the surrounding temperature,) observed by M. Valenciennes[‡] to be developed during the incubation of the eggs of the boa (python birittatus.)

*Food of the embryo.* Experiments by Signor Capezzuoli[§] appear to prove that the fatty matter of the vitellus is especially consumed by the chick during the last days of incubation; and that much of that contained in the chick itself is consumed by it shortly after it is hatched.

*Excretions of the embryo.* Dr. John Davy[||] has analysed the meconium and vernix caseosa. The former contains

| | |
|---|---|
| Mucus and epithelium scales . . . | 23·6 |
| Cholestearine (in plates,) and margarine . . | ·7 |
| Colouring and sapid matter of bile, and oleine . . | 3 |
| Water . . . . . | 72·7 |

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[*] Müller's Archiv, 1843, Heft iii-iv.

[†] Annales des Sciences Naturelles, t. xvi, p. 65.

[‡] Report from the Académie des Sciences, Seance de Dec. 26, in the Gazette Médicale, Dec. 30, 1843, and confirmed by more recent and numerous experiments, in the Report from the Academy for December 16, 1844.

[§] Annali univ. di Medicina; Gennaio, 1844; see also the foregoing observations by Czermak.

[||] Medico-Chirurgical Transactions, vol. xxvii, p. 189. 1844.

Its ashes also contained peroxide of iron and magnesia, with a trace of phosphate of lime and chloride of sodium.

In the vernix caseosa he has found,—

| | |
|---|---|
| Epithelium (epidermis,) plates | 13·25 |
| Oleine | 5·75 |
| Margarine | 3·13 |
| Water | 77·37 |

and in the very minute quantity of ashes which remained he found traces of phosphate of lime and sulphur.

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The subjoined list includes references to the more valuable of the physiological Essays published last year, of which, for various reasons, no notice is contained in the body of the Report. They are arranged according to the subjects to which they relate, in the same manner as the Report itself.

Prof. Harting—Observations on the original forms and subsequent alterations of organic and inorganic precipitates; on the phenomena of the formation of crystals; &c. in the Tijdschrift voor Naturel. Geschied. en Physiologie, 1843, St. 2, 3.

Mr. T. W. Jones—Muscle a neuro-magnetic apparatus, in the Medical Gazette, Oct. 20, 1843; and Dr. Letheby's Remarks on the same in the Physiological Journal, Dec. 1843.

Dr. Houston—On the circulation in acardiac fœtuses; in the Dublin Journal of Med. Sciences, Jan. 1844; and Dr. Marshall Hall's reply, in the same, Sept. 1844.

Dr. Thompson, Prof. Draper, and others—On the diffusion of gases, in the Philosophical Magazine, July 4, 1844.

Mr. Sibson—On the changes induced in the situation and structure of the internal organs in health and disease; in the Trans. of the Prov. Med. and Surg. Association, vol. xii, 1844; [a very important paper, the title of which led me to suppose, till it was too late to correct my error, that it could have little interest in physiology.]

S. Rusconi—On the respiratory organs of the proteus. Oken's Isis, viii, 1844.

Prof. Nasse—On the application of percussion to the study of gastric digestion; in the Med. Corresp.—Blatt. Rhein. und Westphal. Aerzte. No. xvii, 1843.

Dr. Heintz—On a supposed new acid contributing to give the acid reaction of urine; in Poggendorf's Annalen, No. viii. 1844.

M. Parise—On a new method of bleaching bones, by alkaline and alcoholic injections of their texture through small holes bored in their walls; in the Ann. de la Chirurgie, Fevr. 1844.

Dr. Todd—The article *Nervous Centres*, in the Cyclop. of Anatomy.

M. Flourens—The new edition of his researches on the nervous centres.

Dr. Wigan—On the duality of the mind; in the Lancet, March 30, 1844.

Dr. Playfair—On sleep and some of its concomitant phenomena; in the Northern Journal of Medicine, May, 1844.

M. de Haldat—The summary of his researches on the crystalline lens; and M. Prevost, on single vision with two eyes; in Poggendorf's Annalen, 1844, Heft viii.

S. Rusconi—On the non-erectile tissue of the tongue of the chamelion and its protrusion by a muscular apparatus; in the Ann. des Sciences Naturelles. Mars 1844.

Dr. J. Y. Sympson—On the fruitfulness of females born co-twins with males; in the Edinburgh Med. and Surg. Journ. Jan. 1844.

M. Serres—On the corpora Wolffiana and allantois [referred to in the last Report,] in the Ann. des Sciences Nat. 1843. p. 4, Pt. i.

Lund—On fossilized human bones in chalk caves in Brazil, [the caves contain bones of several extinct species, but admit each year the waters of adjacent lakes;] in the Edinb. New Philos. Journal. Jan. 1844.

Various papers on anthropology and ethnology, from the proceedings of the Ethnological Society; in the numbers of the Edinb. New Philos. Journal.

Dr. Laycock—Contributions to proleptics, in several numbers of the Lancet. A summary of them was given in this Journal, July 1844.

# NOTICES OF THE LUNATIC ASYLUMS OF PARIS, &c.

*In a Letter addressed to* John Forbes, m.d. f.r.s.

## Part II.

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### CHARENTON.

The French physicians begin their labours at an early hour; and at eight o'clock on a fine morning in November I had the pleasure of accompanying M. Foville to the celebrated asylum of Charenton, situated a few miles east of Paris, on the elevated bank of the Marne. Sixteen years before, I had visited this asylum, of which Esquirol was then the chief physician. He succeeded the eminent Royer-Collard. The appointment was offered to Pinel in 1797, when Charenton was opened as an asylum for the insane; but he could not make up his mind, Esquirol says, to leave his poor patients and his pupils at the Salpêtrière. M. Royer-Collard was succeeded by Esquirol, at whose death M. Foville was appointed. Thus to revisit the same place, after even the short interval of a few years, is to become more sensible of the gradual changes which time is always effecting; of the removal of individuals, and the onward progress of all those works which successions of individuals are ordained to accomplish. Esquirol has been removed from the scene of his great and useful exertions; but the asylum to which fourteen of his latest and most experienced years were devoted is undergoing that entire renewal for which he so anxiously wished. Old and inconvenient structures are disappearing, and new and elegant buildings are in progress which almost assume the character of grandeur. Whilst these alterations afford opportunities for numerous improvements, both in the construction of the asylum and the management of the patients, strikingly conspicuous at present, when a part of the old building still remains, it is questionable whether so great an expenditure as is now incurred should have been applied to a building in such a site; the surrounding ground, although the asylum is on an agreeable eminence, being rocky, precipitous, and unfavorable to the formation of airing-courts, or obtaining space and productive soil for gardens affording recreation, or fields furnishing employment. These natural inconveniences are alluded to in M. Esquirol's description of the new part of the asylum on the female side, completed in his time, and which have still very great advantages over the older parts of the building. The attempt to adapt the buildings of old religious houses, fortresses, and prisons, to the purposes of an asylum is usually unsuccessful. In the case of Charenton, formerly a religious house, this was from the first detrimental to the old plan, and an adherence to the same locality seems to be almost equally so to the new.

The disposition of the older parts of the asylum of Charenton is so extremely irregular as to defy intelligible verbal description; that of the new, but yet unfinished part, appeared to have the general character of several detached quadrangles or courts, built on each side of a central church of Greek architecture. The material is a beautiful stone. On three sides of each of these courts or quadrangles are handsome buildings of two floors, and on the third side, to the south, a lofty iron railing, through which is obtained a fine and extensive prospect. This noble institution is chiefly destined to the reception of patients of the educated classes of society, or of the middle classes; literary and scientific men, artists, merchants, ecclesiastics, officers of the army and navy, persons in public offices, or their wives or children, when affected with insanity. They are received at different rates of payment, principally in three classes; and some, nominated by the Minister of the Interior, are admitted gratuitously. The annual payments range from 720 to 1300 francs per annum. Some patients are placed in the asylum at reduced rates of payment, also on the recommendation of the Minister of the Interior, and pay only one half or one third of the usual charge. For these an annual sum is paid out of a public fund, by the government. Fourteen beds are reserved for the pauper lunatics of the canton. At present the number of patients is about 450; but with the new buildings a considerable enlargement is contemplated, a circumstance certainly to be regretted. The general adaptation of the building is suitable to those intended to inhabit it; but although its character, taken altogether, and its fine situation are striking, the appearance of the square courts affects the spectator unfavorably; they are extremely clean and command fine prospects, but are not sufficiently spacious entirely to remove the idea of a prison, derived from the elevated and apparently inaccessible situation of the asylum. I found such to be the impression made on the Parisians, and it is, perhaps, disadvantageous to the institution. All the interior arrangements are, however, most unobjectionable. The single rooms for patients, of which there are many, are of good size, excellent height, have large cheerful windows, and are comfortably furnished. The number of large dormitories appeared to me to be very small in proportion to the single rooms, at least in the new building; and I think M. Foville scarcely participates in the general partiality for them which prevails in France. In different parts of the asylum, the furniture and arrangements of the rooms are of course various; but there is great comfort throughout all those of recent construction. The apartments for several of the patients have a small room attached to them for an attendant; and I was glad to see that these were neither dark nor inconvenient, as is too generally the case in the older asylums, in which the attendants received no consideration. The truth slowly makes its way that good attendants make good patients; and that the way to make good attendants is to choose respectable persons and to make them comfortable. The importance of this very simple truth in asylums is immense. In all the French asylums, the beds are worthy of admiration. At Charenton almost all the bedsteads are of iron. The diet, varied according to the habits of the patients, is abundant and excellent. Patients of a certain rank dine with the director, or in their own apartments. All the patients are neatly and becomingly dressed in clothes provided by their friends. The military and naval patients receive clothing from the establishment. Great order and exactness characterizes all the arrangements relative to these matters; but they are too many for detail: although, like everything in this well-governed institution, deserving of the utmost attention from the directors of similar establishments.

As many or most of the female patients at Charenton are gentlewomen, and many of the men are old officers, or persons accustomed to the various impressions of social life in classes enjoying a certain degree of comfort, a great variety of resources becomes not only available in their treatment but necessary. Among the women, all the kinds of needlework form a large part of their daily occupation; but reading, and drawing, and music contribute to diversify their time. Gardens and terraces of considerable variety and beauty offer them inducements to take exercise out-of-doors. Among the men, reading and writing are the most prevalent modes of employing themselves; music and billiards are among their amusements. Many, as in all asylums, prefer walking about to any occupation. Some of the most tranquil women were in large and comfortable day-rooms, in which there were several tables and chairs; but they seem, as usual with the insane, to lead an isolated life; many living much in their rooms, and few appearing to associate intimately with the rest. Most of the men seemed to live much alone, and the apartments of some had the air of a quiet study or bureau, in which our visit created a kind of temporary interruption. Patients of the higher classes fall most easily into a monotonous course of life when insane; and the most active ingenuity of a director can scarcely redeem them from it. In one room, used as a school-room, a patient was acting as schoolmaster or lecturer to the rest; demonstrating the situation of various countries on a large map, which he did quite correctly, although with occasional hesitation: and it was interesting to notice his successful struggles now and then to deliver himself from some difficulty of expression, or some temporary forgetfulness, or some transient confusion in his thoughts.

Every evening some of the patients, named by the physician, and usually including the convalescents, are assembled in a kind of common room, or *salon*, for the sake of society and social enjoyments; some of the officers of the asylum being always present. Something of this kind is much wanting in almost all our large English asylums. The opportunities and advantages of such recreation are too rare; for their effects when enjoyed are very remarkable and evidently salutary. Constant work and formal discipline, transferred from prisons and workhouses, cast a gloom over many patients and create much avoidable discontent. It seems to be forgotten that most of the minds to be dealt with in asylums are *spoiled* for continuous application, efficient labour, or invariable order and propriety; and scarcely less forgotten that many require to be roused into a capacity for exertion rather than to be stimulated to exert themselves regularly. Many young patients, especially, are to be noticed in the wards of asylums, of whom the history is, that after a short attack of maniacal excitement, they have become listless, apathetic, and indolent; but these patients understand everything that is said to them, and many of them are neither affected with delusions or bewilderment of mind. The brain seems to have lost much of its energy; and their tendency is towards total imbecility. Such patients are unwilling, generally indeed unable to work; and therefore they fall into disfavour with all but medical observers. Under an austere system they perish; falling gradually into fatuity or dementia. They require encouragement; and for them cheerful recreation, frequent amusements, various exercise, mingled often with kind remonstrances, are remedial. They are more benefited by drawing, music, and children's games, than by medicine. Among patients of a higher class, as at Charenton, social appliances become of wider applicability. In all these attempts, however, as in the whole treatment of insanity, a moderation must ever be preserved. Lunatics bear no violent impressions with benefit, or even with impunity. The appliances should be very frequent; but never long continued, and never excessively exciting.

M. Foville's writings on Insanity and on the Nervous System are so well known in England, that it is scarcely necessary to say that he is a physician of great powers of observation and reflection, anxious for every improvement, but careful of hasty innovation, and habitually exercising an accurate judgment on whatever falls within the department of medicine in which he is now so experienced. The annual Reports of Charenton, presented to the Minister of the Interior, are not published; a circumstance which probably deprives the public of some of those fresh and valuable impressions suggested in the constant attendance of a physician in an institution presenting a large and interesting field for observation; and the value of which might be gathered even from the casual remarks made by this accomplished physician in the course of the long morning visit in which I was permitted to accompany him. His general treatment of his patients appeared to me to be essentially the same as that adopted by English practitioners in mental disorders; consisting of means of regulating the functions of the digestive organs and the skin, equalizing the circulation, allaying nervous disturbance, and soliciting a renewal of natural cerebral exercise. In his intercourse with his patients he is extremely mild, composed, and judicious; never attempting too much at once, or endeavouring to force powers that require considerate direction rather than stimulus; and evidently doing only what he considers to be really useful, and nothing from ostentation. Thus M. Foville does not assume the office of lecturer as he goes his rounds, or make the least attempt to convince the visitor that he is enjoying a great privilege. But the whole demeanour of a sensible physician when he goes through the wards of an asylum is instructive; everything has its meaning and its object. Vivacious visitors too often forget this; talk too much, suggest too hastily, discuss too earnestly, and observe too little; oblivious that the physician is actually applying various proportions of mental remedy at every step. I need scarcely say that in my capacity as a visitor I was careful not to err in this way.

It appeared to me that M. Foville was particularly observant of the general character, temperament, and configuration of his patients, and, although a very guarded phrenologist, had paid more than common attention to the relations of the skull to the development of the principal divisions of the brain. His anatomical researches and views respecting the physiology and pathology of the cerebro-spinal system have lately been given to the public in a valuable Treatise, reviewed in your Twenty-fifth Number, and of which it is unnecessary for me to speak further. M. Foville has made curious and, I believe, original observations on the shape of the ear in different forms of insanity, and has noticed an analogy or resemblance between the development of different portions of this organ and the brain of the patient. Of these views he was so obliging as to give me some explanation, illustrated by an extemporaneous diagram, and afterwards by corroborative examples. In some of the cases of dementia, or of the lowest degree of intelligence, the flatness and defective form of the helix, anti-helix, and tragus, and the disproportionate enlargement and pendulosity of the lobe of the ear, and rounded clumsy shape of the outer edge of the auricle, were very striking. Subsequent observations have led me to believe these views to be exact as well as curious; and they exemplify the abundance of external evidence available to the physician in relation to internal disorder. The diagnostics of Lavater fell into discredit by their idle and hasty application in the hands of his followers; but there are remarks in that great observer's works, even on so minute a matter as the natural growth and disposition of the *hair*, of the value of which I have only become conscious since my own observations have been accidentally directed to the hair as one of the external characteristics of melancholia, mania, and imbecility. Those familiar with the patients of any asylum can scarcely have failed to observe how frequently the disposition of the hair during the whole of a long maniacal paroxysm receives a peculiar modification; becomes raised, bristled up, *herissé*, and disordered beyond the control of comb or brush. The heavy masses of smooth hair in the melancholic must also have attracted attention. These characteristics are well portrayed, in some of the plates attached to Esquirol's work; and also in a spirited engraving entitled 'Narrenhaus.' It is not necessary to magnify the importance of these things; but they are not to be despised. They long to the studies of which Celsus says, *adjuvant excitando artificis ingenium.* Not very long ago, M. Foville was called upon by an intelligent and philanthropic person, who appeared to take much interest in the management of lunatic asylums; and he was greatly struck with a conformation of ears in this gentleman which he had never previously observed, except in cases of mental irregularity or disorder. I happen myself to know that the individual who was the subject of this observation has had several attacks of insanity; and although now at large, and exhibiting considerable mental activity, has repeatedly been in confinement; circumstances of which M. Foville had no knowledge when he remarked what seemed to him to be an anomalous peculiarity.

I did not see at Charenton any cases of an actual disease of the external ear which seems to be especially if not exclusively allied with cerebral disorder, being perhaps only observed in the insane. It consists of general but not acute inflammation, and slow enlargement, by thickening and effusion, of the whole of the outward ear; sometimes attended with much suffering; often becoming mitigated and then renewed, and never wholly removed, but not affecting the sense of hearing, except by mechanical obstruction of the meatus. There are always some examples of this affection at Hanwell, chiefly among the male subjects; but it cannot be clearly associated with any one original form of disease of the brain. It is allied in one case with epilepsy and weakness of the mental faculties; in others with general paralysis, and the incoherence consequent on mania; in others with confirmed dementia.

At Charenton, as in all large asylums, there are many examples of the form of paralysis, first fully described by M. Calmeil, and now generally known to the physicians of such institutions, although little recognized out of them, and called paralysie générale. M. Foville does not appear to be at all more sanguine than myself with respect to the means of cure of this form of malady. Daily experience confirms my opinion that it is invariably connected with irremediable organic change in the membranes or substance of the brain, or with effusions too extensive to be removed.

There was more agitation in the wards devoted to the least tranquil of the female patients at Charenton than I had observed at the Salpêtrière; but no great violence of conduct or manner: one apartment only presented an unfavorable exception, an apartment belonging to the old portion of the buildings allotted to the most turbulent. In this room I was strongly reminded of what was once familiar to me at Hanwell. The room seemed on entering it to be filled with noisy voices. Four or five of the female patients were sitting in those heavy coercion-chairs which are now rarely to be met with; one was leaning back in the chair with an air of sullen depression, and quite silent, appearing, indeed, to be in a state of mere dementia. Two or three others were struggling and declaiming with great vehemence and loudness; and another was talking very volubly but with perfect good humour. I was in some degree prepared for this spectacle by having just read in the 'Quarterly Review' that M. Foville was opposed to the non-restraint system; a subject on which I had not heard his opinion. But still it appeared to me almost as shocking as if I had never witnessed such a scene before, and had forgotten the dangerous ferocity of the daily occupants of the old coercion-chairs at Hanwell, and the wild careering of patients bound up in strait-waistcoats, and the shouts, oaths, threats, and curses which used to greet us every morning in the refractory wards, until the abolition of violent methods of repression caused such scenes to be unknown, and any approach to them rare and of short duration. As M. Foville did not make a single remark on these cases, or on the subject of restraints, I felt it incumbent upon me to maintain an equal reserve. I recollected that when he visited Hanwell in 1840, the great experiment of dispensing with restraints there, although previously made at Lincoln, was only in the first stages of its progress, and embarrassed by great opposition and difficulty. I thought it probable that he might have read the recent Report of the Commissioners in Lunacy, in which circumstances were alluded to, calculated without explanation to throw discredit on the non-restraint system, as practised even now at Hanwell. Otherwise, to a physician of so much good sense, and apparently so unprejudiced, I think I could have shown that no inconveniences were avoided by the restraints imposed on these poor women, which could not have been better obviated by less objectionable means; whilst some inconveniences were incurred by the use of restraints, that might have been advantageously and altogether avoided.

It appeared, from such inquiries as I had the opportunity of making, that in each of these examples of the use of the restraint-chair, the reason assigned was precisely similar to what is always alleged where restraints of any kind are still habitually employed. One patient would tear her clothes if at liberty; one would roll about the floor; one would break the windows; one would undress herself. Such reasons may surely be pronounced to be most unsatisfactory; each of these habits admitting of no very difficult remedy without restraints; and the tumult, the discontent, the air of neglect, the bad smells, prevailing in this as in every room where restraints are often used, constituting evils far greater than those which it is employed to prevent. Almost when writing these observations I have before me a fine old man, formerly a soldier, and recently brought to Hanwell, as too many are brought, merely to die. Broken down in constitution by service in a bad climate, he became enfeebled in body and mind; but, as his poor wife informs us, he was cleanly in his babits, and able to move about until lately fastened down in bed for weeks in one of the houses in which restraints are yet used with impunity; since which time he has become unable to walk, is suffering from ulceration of the back, is unable to attend to cleanliness, and lies helpless on a bed from which not all our care will ever make him rise again. I naturally mention this case because I have just been grieved by the sight of it; but similar instances are continually presented to our attention.

As M. Battelle has been furnished, at his express request, with patterns and models of all our Hanwell devices for meeting every inconvenience without tying the arms and legs of our patients or shutting them up in chairs, I hope he will be able to convince the officers of the asylums over which his administration extends, of their efficacy as well as their simplicity; and that their own experience will soon satisfy them of their preferableness to violence in any form. They cannot but find, that if a patient tears her clothes, it is not impracticable to dress her in strong clothing, not easily torn. If bedding and blankets are destroyed, strong cases will protect them; which restraints do not. If a patient undresses herself, the substitution of a small lock for buttons or strings, securing the dress at the neck or waist, and at the wrists, is readily accomplished and renders undressing impossible. Dresses of a peculiar form easily obviate the removal of blisters, dressings, &c., in cases requiring them, and remedy many inconvenient or uncleanly habits. If some patients take delight in breaking windows, it is easy to guard such windows as are exposed to these accidents by wire-blinds of a light construction, between which and the windows plants may also be placed, and kept from damage. If they feel a wild gratification in rolling on the floor, it is easy to have a soft covering for the floor. If, more desperate, they would dash themselves against the walls, which they very rarely indeed think of doing, it is not difficult to pad and cushion the walls of their rooms. If they will not lie down, or if from epilepsy or weakness they fall out of bed, it is very easy to make the whole floor a bed, from which they cannot fall, or on which they can walk, without danger, until they prefer lying down. For all cases of extreme violence, seclusion, or free exercise with proper superintendence, are the only useful measures not strictly medical; if they fail to produce tranquillity, violent restraints will render it still more unattainable. There is no difficulty and no danger which may not be met by analogous contrivances, which have now been successfully used in several English asylums for some years. And the general results of these contrivances are, that the patients become calmer, more apt to receive the impressions of all humane treatment; that the attendants do not become nursed in and inured to inhumanity; and that the *health* of the patients, and their cure, become the first considerations. They enjoy the free exercise of their limbs; and yet, in the end, fewer windows are broken; fewer violences of all kinds are committed; the fierce excitement of the wards disappear; the life of the lunatic is rendered more tolerable, and that of the attendants and officers less anxious.

All my remarks have sufficiently shown that I think the general treatment of the patients in the French asylums is kind and judicious; but on recalling what I witnessed, I feel impressed with an opinion that the practice of resorting to restraint is not without its usual influence on the physicians who do so, although they may be somewhat unconscious of it. The practice tends to deaden the feelings to the actual condition of the patient,—an afflicted, suffering person; weak, wayward, and indolent, perhaps malicious or vicious, and yet innocent; above all, helpless and unprotected, except by the physician and those whom he employs. In illustration of this, I will merely mention that the use of baths of all kinds, but especially in their severest forms, is professedly resorted to as much and as often for a punishment as for a remedy. That the shower-bath and the douche have a moral, as well as a physical effect on an insane patient is undeniable; and that both are, in certain cases and with certain precautions, useful, with both these intentions, may also be granted; but it is no less certain, that to resort to either of them solely as a moral remedy, or as a means of repression, is a practice fraught with peril to the humanity of the practitioner, and liable to cruel abuse in the hands of his attendants. So used, it may become an instrument of torture, not a remedy; and instead of being employed to cure irritation of the brain may be applied to subdue and alarm the obstinate or the frantic, and even to force a poor creature, whose energies are oppressed, to undertake work only adapted to a healthy man. If the principle is once admitted that punishment and mortification are among the proper remedies for the insane, and that they ought to work, whether they work willingly or not, the austerity of cold and unfeeling officers will carry it to detestable excess. Combining it with the economy so important to all governing bodies which desire to conciliate the public, it becomes a pretext for lowering the diet, for neglecting the clothing, for withholding needful extras, except as the price of labour. For such offices, the effect of which is concealed, the officers of an institution may easily gain favour when really least deserving it. Certain it is, that the use of restraint seems, by some fatality, to be associated with innumerable negligences, of all which the patients are the victims. But much cold-hearted negligence, much severity even, may long and successfully prevail where restraints are ashamed to show themselves.

I must not, however, be unjust to Charenton, or to the asylums of Paris. When I recollect that in the Salpêtrière and the Bicêtre there are no resident physicians, the progress already made in abolishing restraints excites my surprise. Knowing the difficulties of the task, even to those constantly on the spot, I cannot sufficiently admire the courage, as well as the humanity of those who make the attempt in asylums in which they can only spend a few hours in a week, and to which the resources of their minds, and the suggestions of their kindness, can consequently have but transient application, and with faint results. In all the English and Scotch asylums in which restraint has been wholly abolished, there has been a resident medical officer zealous for its abolition; ready at any hour to make a prompt investigation into all the supposed obstacles to its success, and enabled to counteract opposing and sinister influences. I do not think its abolition has been effected, on a large scale, in any other circumstances.

These reflections are connected with the very important subject of the government of asylums, concerning which the most defective notions seem to me to prevail. In England no two asylums are governed on the same principle; and the rules of many are constantly changing. In Ireland, although the officers have the advantage of acting under fixed regulations, which cannot be capriciously and suddenly changed, the government of asylums is intrusted to non-medical persons, not always persons of education. In our English county asylums, the qualification for being elected a governor is the accidental one of being in the commission of the peace. In the great charities for the insane, the office of governor is purchased. These arrangements seem scarcely adapted to the management of institutions differing from most others, in the necessity that exists for everything being done with an invariable regard to the state of mental and bodily infirmity with which every individual admitted into an asylum is more or less affected. Nothing is more certain than that from the laying of the first stone of an asylum to the completion of the rules for all who are to have authority in it, whatever is done without regard to this speciality will be done wrong.

There are many things in the constitution of Charenton deserving of attention; particularly at a time when there seems to be a prospect of every county being provided with a public asylum. There is a director, to whom all the economy of the asylum is subjected; he is appointed by the Minister of the Interior, and has himself the appointment of the treasurer, steward, architect, &c. There is a superintending committee, also named by the minister; they make visits of inspection, and report on what seems to them to require attention. The director carries all into effect. The chief physician and chief surgeon are also appointed by the minister of the interior. An assistant physician, and a medical officer called an inspector of health, are appointed by the physician, and also a limited number of house-pupils, each admitted for three years, who assist in all the medical duties. The director in no way interferes with the physician's department; they consult together on all general matters; but the physician entirely regulates the classification of the patients, their treatment, general and particular, and directs the mode of employment suitable to each. The physician is accompanied in his visits by one of the other medical officers and one or two of the house-pupils: they are accountable for all his directions and prescriptions being attended to, and they keep the journals and registers of the asylum.

All these arrangements seem well designed to ensure the appointment of competent officers; and to secure a just attention to the economic and general details, without producing a hurtful interference on the part of the director with the important functions of the physician, who has the entire control over everything comprehended in the medical, physical, and moral regimen of his patients; is the real head of the medical staff, and solely regulates the placing of the patients on their arrival and afterward. He prescribes the kind of employment and the degree of liberty, exercise, &c. proper for the patients, and is the only acknowledged judge of their fitness to be recommended to the religious care of the chaplain. The regulation which permits a certain number of young men to live in the asylum for a time as house-pupils is not only the means of training up useful officers for asylums, but enables the chief physician to keep fuller and more accurate records of the cases, and to preserve many observations of value which no one else has time to register with regularity. This admirable regulation prevails at Gloucester and at Glasgow, but not in the larger asylums of Bethlem, St. Luke's, Middlesex, or Lancaster. The chief physician at Charenton has also the chief control of the attendants, both male and female. No officer divides the power with him, or counter-orders his directions. Each female ward has a head attendant, by whom all the duties usually assigned in England to the matron on the female side, and for which no special officer is ever deemed necessary on the male side, appear to be very efficiently performed. Nothing, in short, that can affect the condition of the patients is done without being first submitted to the physician. That some womanly duties of kindness must be pretermitted by the absence of a matron is without doubt to be feared; but I can imagine reasons of great weight for the determination come to in the French, and recently in some of the American asylums, for having neither male nor female officer who is encouraged to act without medical control.

It is probable that for the salutary power now given to the physician at Charenton, he is in some degree indebted to the annals of the asylum, when, at a former period, a director was not in such friendly relation with the physician as the present experienced and liberal director, M. Palluy, under whom the asylum is undergoing its present renovation, appears to be with M. Foville. In M. Esquirol's account of Charenton there is mention made of a period when the director of the time utterly disregarded the opinions and authority of the physician. Difficulties of all kinds were thrown in the way of medical investigations. Statistics in every shape were discouraged or forbidden. The director, aided by two assistants on the male side and one on the female side, elevated into a kind of matron, was able to oppose the physician at every point; had the whole control of the attendants, and the ordering of all that was called their moral treatment. The results were instructive, and may be remembered even now with advantage. Instances of mismanagement became numerous and lamentable. Restraint was permitted to be abused. Secrecy became the rule of the asylum. An excessive economy prevailed in essential matters, mixed up with extravagance in others, calculated to produce a striking effect upon the uninformed public. When the happiness of the patients or their well-doing had ceased to be regarded as the first consideration, public entertainments were got up: not only were plays performed, but ballets were danced by the patients, and the excitements of strange musicians enlisted into the service of the asylum, to please excitable audiences. All Paris flocked, by permission, to see these exhibitions, the effects of which were of the worst description. It is just and necessary to draw a strong line of separation between all such public and noisy follies permitted in asylums at any time, and those social and cheerful assemblages of the patients of which all experience attests the advantage. This line will never be forgotten by a judicious physician, who must indeed ever grieve to see it overpassed; and if such scenes are enacted before him, can only be an unwilling and mortified spectator of them.

These exhibitions no longer disgrace Charenton. The physician is not required to act with his hands bound. He is not controlled in his proper functions, nor thwarted by his inferiors, nor compelled to take the best care he can of patients for whose cure and safety he is responsible by means of attendants chosen by those who wholly disregard his views. Yet I confess it occasioned painful emotions in my mind to see the visits of so good a physician as M. Foville necessarily almost limited to a formal tour of inspection, accompanied throughout by other officers, during which there is only time for a few words to be spoken to a certain number of the patients. In such visits the only part of the treatment which is fully attended to is that which is merely medical. The general moral treatment, based on physiology and psychology, and which is the true domain of the physician who treats mental disorders, is not wholly neglected, for even a few words or a friendly salutation, or a kind look form parts of it, and by repetition parts of important effect; but still there is much left undone that ought to be done, and would oftentimes be curative. Esquirol, to whom all that is required from and in the physician to an asylum was thoroughly and practically known, observes that "it requires a particular cast and character of mind to cultivate this branch of art fruitfully; that the physician must have much time at his disposal, and make, as it were, an abnegation of himself. . . . . He who would be useful," he adds, "to the insane, should visit them many times in the day, and even during the night; and not be satisfied by a morning visit, as in ordinary hospitals." The necessity for this cannot, of course, be always readily comprehended by the governing bodies of such institutions, who, whatever their intentions, are not always prepared by education or habits for appreciating the most delicate of tasks that can be confided to a physician. The physician alone knows what might still be attempted; what might still be achieved. The withholding from him the full privileges of doing good is not to be viewed as a matter merely affecting the dignity or pride of a doctor. Whatever limits his authority and lessens his opportunities of exercising his skill for the benefit of his patients, seriously interferes with their comfort, and has a direct tendency to retard the recovery of a great many of them. I am convinced that the slow progress of knowledge in relation to mental disorders, and the error and uncertainty prevailing respecting the effects of all kinds of medical treatment, and the safety of disusing mechanical restraints, is more to be attributed to the want of opportunities of constant observation than to any other cause. The insane require to be very frequently seen in order to show the actual result of what is ordered; and this can only be done by medical men who live under the roof with them. For this, among many other reasons, the physician to an asylum should be resident, and enabled to pursue his own views of treatment consistently. From the moment of admission the patients should feel that their destiny is in the physician's hands. He should receive them, place them in fitting wards, see them frequently, and become their friend and their guide. All their treatment should be dictated by him and by him alone. He should have full power to protect them from all unfavorable influences, and to extend to them every aid to the renewal of those energies which are lost. They should form a family of which he is acknowledged to be the protecting head. He should know, and be understood by his patients to know, how every part of their treatment is conducted. They should see him when they are collected at their meals. He should often observe their appearance when employed. He should know how they are lodged. In all their recreations he and his family and his friends should take an occasional part. He should join them in their humble devotions at the throne of their Maker. Exclude the physician from all this, and he is deprived of some of the highest attributes of his profession. Supposing him to be capable of conceiving a perfect system of management, nothing should be permitted to interfere with it, lest it become deformed in execution and futile in result. When this is done in all asylums, and not before, it will be seen how much more can be effected for the insane than is yet accomplished in the most celebrated of such institutions. Then, and not until then, will any one of them present a perfect example of an asylum in which the influence of the intellect and the feelings has superseded that of mere physical power.

On the day after my visit to Charenton, I had the gratification, by means of M. Foville's introduction, of an interview with M. Ferrus, whose name has been so long and honorably associated with institutions for the insane; first, as physician to the Bicêtre, and subsequently as inspector-general of the asylums of France. The immense ameliorations which have been made or are in progress in the French asylums are understood to have received a great share of their impulse from the zeal and ability of M. Ferrus. He possesses an extensive and exact acquaintance with everything connected with their administration, conjoined with that practical knowledge of the treatment and general management of lunatics which best directs the judgment even of the most intelligent and humane public functionaries. Conscious as M. Ferrus cannot but be of the extensive reforms which he has promoted throughout the asylums of France, he appears wholly free from the weakness of believing that every desirable end is yet accomplished; and he listened with a very gratifying appearance of interest to my account of what had been attempted at Hanwell and in other English asylums, and expressed, with a sincerity that could not be doubted, the pleasure he derived from hearing that we had endeavoured to take one step more in improvement by the abolition of all physical restraints. M. Ferrus is the president of the Académie de Médecine, an academy so liberal in its construction and so influential in its proceedings, that it is a just matter of surprise as well as of regret that we have no analogous institution in England. At one of their Monday meetings, I had the pleasure to witness the assemblage of about 300 members and visitors, comprehending some or most of the distinguished physicians and surgeons of Paris; and of hearing some of them take an animated part in the discussion of the claims of M. Guerin to the merit of practising a new and successful operation in the treatment of distortion of the spine. On this occasion, also, I had the great pleasure of once more seeing M. Pariset, whom I first knew when he was physician to the Salpêtrière, now a veteran among physicians who have devoted themselves to the insane, and enjoying a well-earned fame. His age is now considerable; but he is still one of the secretaries of the Academy, and his characteristic activity has not wholly deserted him; and when proper occasions animate him, as in the *Eloge* of M. Esquirol, lately read before the Academy, his wonted eloquence is still shown to remain. I introduce his name, when speaking of the asylums of his country, with deep respect. Throughout a long professional life he has been distinguished by a devotion to scientific inquiries, which has made him regardless of danger and fatigue amidst pestilence and death; and in his treatment of the insane, his views have been invariably marked by warm philanthropy, tempered with soundness of judgement. If he has been gifted with the liveliest powers of expressing and enforcing his opinions, he has on every occasion devoted those powers to the advocacy of humanity.

## ROUEN.

### ASYLUM OF ST. YON.

Before M. Foville's removal to Paris, he was already distinguished as the physician to the Asylum of St. Yon, at Rouen, to which office he was appointed on the recommendation of Esquirol, who has commemorated the order and discipline which he there introduced. By M. Foville's advice, I was induced to quit Paris for two days, for the sake of visiting an establishment, the general plan of which is understood to be conformable to the views of such buildings entertained by M. Esquirol himself; and which also was one of the first in which those reformations commenced, to advance which he so greatly laboured.

The railway makes a journey to Rouen from Paris, and back, easily performed in a few hours; and to those remembering the journey from one place to the other as the wearisome occupation of a whole day, the improvement thus effected conveys almost a miraculous impression. It requires some effort to allude to this short journey without remarks unconnected with the object of my letter; so interesting and so beautiful are those scenes of Norman history and romance through which the traveller is rapidly transported, as in a dream. The flight and traces of time, too, are never more strongly brought to the traveller's mind, than on revisiting any populous town after many years. When I saw Rouen more than a quarter of a century ago, all was ancient in that singular town, and a frail bridge of boats alone connected the two sides of the broad river that runs through it. Thirty years of peace have given rise to new edifices: two fine bridges of stone cross the Seine, and a railway and its accompaniments enliven the southern suburbs, formerly so dull and deserted. When I then first saw the magnificent cathedral, it was in the blaze of an autumnal day, on a Sunday, during the morning service; and the Cardinal Cambaceres sate on his throne, in scarlet robes, in appearance not unlike the portraits of Wolsey: the sunshine streamed down on a large congregation, surrounded by all the pomp of Roman worship, and the vast aisles were filled with the sacred melody of organ and choir. It happened that *this* time I visited it quite at the close of a dull November day, in fog and rain, when there was scarcely light sufficient to find the way up to the grand altar. Here and there a single candle threw its beams into the sublime darkness of the building, and a few persons might be seen kneeling here and there in solitary and tranquil devotion. A few figures now and then passed across the gloom; priests and their attendants, or devotees coming to evening prayer. The lightest step was audible; and in this still obscurity I walked reverently round the sacred edifice, and came to the tomb wherein now lies that same Cardinal Cambaceres "in dull, cold marble;" and, thus reminded of the swift passing of years and of men, could not long forget that the allotted time for performing any task proposed to be accomplished was narrowing too, and must not be wasted.

The Asylum of St. Yon, an ancient manor house, originally without the boundaries of the town, and at a subsequent period the property of one of the religious orders, and used for the various purposes of religious instruction, the education of indocile and troublesome young persons, and also for the reception of epileptic and insane people, but converted at the time of the revolution into a prison, finally became an asylum for the insane of the department of la Seine Inférieure about twenty years since. The plans of the new buildings rendered necessary were submitted to the inspection and opinions of M. Esquirol, and of M. Desportes, who at that time held the office now filled by M. Battelle. It is approached by a long street in the southern quarter of Rouen. The gate of the asylum opens from the street, and the front of the church is next to it, being at once the church of the parish and of the asylum. The asylum, and the gardens and cultivated grounds are extensive, conveniently subdivided, occupying a large triangular space within high walls, and not much overlooked by surrounding houses. It is not very easy to form an accurate notion of the disposition of asylums arranged like those I have lately seen; in which, instead of the intelligible simplicity of a single mass of buildings, there are several and variously disposed edifices or quadrangles, or separate houses. But at Rouen I had the assistance of a large plan, kindly given to me by the director, M. Boutteville, in the absence of M. Parchappe, the physician to the asylum, an absence which I very much regretted.

On entering the asylum, a considerable building is first approached, forming a square, with a garden in the centre; this building is partly occupied by the sisters of a religious order, who in this asylum perform all the offices of nurses or attendants for the female patients; and it is partly devoted to the two infirmaries, and to day-rooms and dormitories for quiet patients. It also contains the bureau; and in the basement there are store-rooms, workshops, kitchens, and various offices. This building appears to be a part of the older constructions, and not in exact accordance with the design of the more recent parts of the asylum. To the right of it, and separated by cultivated grounds, are three quadrilateral inclosures, each distinct from the rest. These contain the female patients; two of them being for the moderately tranquil, or those described as under treatment; and one, the most remote, for the refractory or violent. There is a separate building for such of the female patients as are dirty. On the left of the central building, similarly separated from it, are two of the same kind of quadrilateral inclosures, for the male patients; one for the moderately tranquil, the other for the more agitated; and there are small separate wards at the outer extremity of one side of each of the quadrangles, and extending beyond it; one for the dirty, and one for the extremely violent; and to each of these there is a separate airing-court. On each side of the asylum there are separate buildings, with pleasant gardens, for the patients who pay for their admission, maintenance, and treatment. The laundry and baths form also detached buildings; and to the baths there are separate covered galleries or corridors, but from the two sides of the central building only. Every court, and the interior of every quadrilateral inclosure, is planted as a garden, so as to form an agreeable walk. All the inclosures have buildings on three of their sides only, the fourth being bounded by a high palisade, in all cases affording a view of the outer garden, or farm-grounds; and the buildings on the three sides consist only of one floor. The cells or sleeping-rooms of the patients have large windows towards a colonnade or open corridor, which is continued on every side of the quadrangle, and the doors of the rooms are opposite to the windows, and open into a covered and closed gallery, lighted by high windows.

An asylum thus arranged affords apparent facilities for the subdivision and classification of the patients; the accomplishment of which is, however, often impeded, always limited by numerous considerations, only intimately known to those who live in asylums; but, above all, by the size of the dormitories in an asylum, which, if large, renders a proper classification of the patients quite impossible. When the patients are all on one floor, and have no stairs to climb and descend, many of them may be more easily induced to take exercise, or can more easily walk out, or be carried into the open air. The attendants are also nearer to each other, and may support each other more promptly in case of accidents or sudden danger. Windows are not so far from the ground: but the inconvenience of having so many detached edifices, not even connected with covered walks, and some of them necessarily remote, and all separated from the central or chief house, from the residences of the officers, from the surgery, the store-rooms, the baths, the kitchen, the laundry, and from the chapel, are also obvious. The general inspection of such an asylum must be very difficult; and the sudden emergencies of insanity and sickness can scarcely be efficiently met. The eye of the superintendent must often be wanting, and the patients left to the unchecked control of attendants. If the windows are less obnoxious to accidents, they are also more favorable to escapes. But the greater expense alone of such erections will probably always preclude their general adoption.

There are more than 600 patients in the Asylum of St. Yon: a certain number of them are received for annual payments, varying from 450 to 1500 francs (from about 18*l.* to 60*l.* English). The rest are patients belonging to the department of the Seine Inférieure, or to the departments adjoining; for each of whom the departments pay respectively 15*l.* and 18*l.* per annum.

The general management of the asylum appears to be very good: much attention is paid to the employment of the patients; some to their general instruction also; and some to their amusement. The male patients are chiefly occupied in the gardens and grounds, where I saw many of them very busily and cheerfully engaged in making various alterations in progress at the time of my visit. A small weekly allowance of money is made to those who work, which constitutes a little fund to aid them when they leave the asylum, on recovery. The gardens and promenades are kept in admirable order by their industry. The female patients are also very industrious. In one room there were forty engaged in needlework; and there were several in other rooms. Some of the sisters were in each of these apartments, sitting with the patients, and directing them in their occupations: the composure and mildness of manner of these excellent persons towards those to whose care they devote themselves, were answerable to the general character they have obtained as nurses or attendants on the insane. Several of them are, it may be supposed, superior in station and acquirements to the ordinary nurses, and no doubt they are also treated with proper consideration, without which no good nurses can be retained in any establishment.

The same extreme tranquillity, which I have already noticed as surprising me at the Salpêtrière, was observable in the wards of the St. Yon. I imagine that this great degree of quiet and silence in some of the French asylums, and which I have also remarked in some English asylums, although certainly not at Hanwell, is not altogether a proof of excellence; but arises from the patients not being habituated to seeing many visitors, or to being addressed and noticed, or allowed much of the freedom of conversation, or discourse rather, in which so many lunatics take delight; and which certainly calls for occasional restriction. My partiality for Hanwell perhaps influences me in my preference of what I witness there to the forced decorum and reserve to which I am now alluding. I certainly do not object to seeing the officers, who enter the wards, surrounded by patients eager to communicate their joys or their sorrows, to prefer their requests, or often just complaints, and to make their mindful and affectionate inquiries. These opportunities form the principal relief of the terrible monotony of years passed by those confined to one building and its grounds, many of them for life. The mere expectation of such visits constitutes much of their happiness, and whatever interferes with them is a denial of comfort to the patients in their captivity and their affliction. Nor can I consider the discipline or the prosperity of an asylum endangered if, on entering the workrooms, the knitter or embroideress suspends her occupation, or the tailor leaves his shopboard, or the carpenter desists a few moments from hammering and planing, to exchange a few cheerful words with a visitor; whereas, to walk through workrooms and wards full of insane persons and see no head raised, and find all silent, appears to be somewhat unnatural, and makes one suspect that many feelings are forcibly repressed which to express would be a pleasure or a relief that ought not to be withheld. The visit of the chief officer of an asylum ought to be the chief medicine; it should be the principal among remedies; the daily repetition of it, his manner, his words, his demeanour, his voice, are of more influence, for good or evil, than all the stores of the pharmacopœia. To ensure good effects demands a great devotion of time, considerable alacrity of mind, and a genuine and never failing compassion; none of which qualities are called for to walk through a silent crowd of toiling people. And if the officers habitually pass the patients by in silence, with small recognition or regard, or merely order medicines, baths, or means of repression, it is not to be supposed that the attendants will be habitually considerate and kind to those scarcely deemed worthy of the notice of the officers to whom they are responsible.

These latter observations are not entirely without application to the asylum at Rouen; for although the well-arranged and able reports of M. Parchappe, the chief physician, show that he entertains both humane and just views concerning the influence of recreation in the treatment of insanity, encourages their instruction in reading and singing, and believes that, with certain prudent limitations, music and other entertainments become remedial, and, in short, appreciates all the best principles of moral treatment, there is still visible at St. Yon an adherence to a method of discipline which savours of the austerity of an ancient religious house. In the regulations, whilst nothing is said of preventing the beginning of strife among the patients, it is ordained that if quarrels arise they are to be repressed with severity and reprimands. Baths are enumerated among the means of repression, which means punishment, and not among the resources of treatment. The douche is only employed as a punishment. No various dress, no decoration, no eccentricity of appearance, however harmless, is allowed; and at the visit of the physician, who should surely come among his patients as a father among his children, it seems that the patients are arranged in ranks, the men standing up, the women seated, but all expressly forbidden to make complaints. A profound silence is prescribed until the physician's visit is at an end. It is needless to say that these regulations must keep the physician a stranger to the character of many under his charge, and if promotive of discipline and submission, are totally exclusive of friendly intercourse, and the kind of consolation so often required at the physician's hands. If we were to suppose such regulations introduced at Hanwell they would give to that asylum, compared with its present appearance, the aspect of a mausoleum for the dead.

The employment of the patients of St. Yon has received careful attention. Needlework, straw-hat making, stocking-knitting, and the business of the laundry, seem chiefly to occupy the female patients; and the men are not only engaged, as has been already mentioned, in the grounds, but also assist the cooks, the butcher, and in the general cleaning and service of the wards. The patients dine together in the different day-rooms, and are allowed the use of ordinary knives and forks. They sleep in dormitories, containing each about thirty beds, some attendants sleeping in each dormitory. All these rooms were particularly neat and clean, and the beds excellent and in the best order. The ventilation through old fashioned windows, and the warming of the asylum, appeared defective. The fire-guards are of the ancient kind, made of strong iron bars; but I saw no iron fetters hung upon them, such as I lately observed with surprise in the asylum at Manchester. At the Rouen asylum, the opinion of dormitories having a calming effect on the patients is strongly entertained, an opinion in support of which our experience at Hanwell certainly affords nothing, the effect of dormitories seeming to be always quite the contrary.

Although the general appearance of the patients whom I saw was comfortable, and they were most of them well clothed, I think I caught glimpses in the quadrangles on the female side of the house, which I was rather rapidly led through, of quiet-looking patients in the camisole or strait-waistcoat; and in one noisy room there were several so dressed. It is stated, indeed, in one of M. Parchappe's reports, that the strait-waistcoat is seldom used on the male side of the house, but that altogether 3 in 100 are habitually so restrained in the asylum. The same plan would make it necessary to introduce thirty strait-waistcoats into the Hanwell asylum for ordinary and daily use. Neither the management of patients without restraint, nor our unobjectionable method of secluding patients for a time in their usual sleeping rooms, or in a padded room, according to circumstances, seem yet to be understood. But seclusion is actually practised in a certain manner, resembling what I remember in the old asylums of England less than 20 years since; the patient secluded being left entirely naked, and lying, if he chose it, in his deep crib of straw, covered over with it for warmth This is at least less objectionable than restraint, although a patient so left is seldom properly attended to, but is permitted to lie as untended as an animal in a straw-yard. Washing, if thought of at all in such circumstances, is rudely performed, and perfect cleanliness is out of the question. The sympathies of the attendants are not strongly excited in such cases, and when once the crib and the straw are resorted to, their convenience prolongs the period for which the patient is consigned to them. With a patient in simple seclusion, liberation is easily effected: the door is opened, and he walks out. A patient who has wallowed naked in straw cannot be produced without much more trouble, and the trouble is deferred. We entered the room of a man thus situated at the Rouen asylum; he talked quietly, and made no attempt to get out of his crib; but he was evidently in an excitable state, for which simple seclusion would have been an appropriate remedy. But when the door was shut upon him, and fastened by two large noisy bolts, the question naturally presented itself—how long will this man remain there?

I should hesitate to offer such a question; but if I had up to that time wanted much experience in the neglects incidental to the restraint system, I could not have been insensible to the danger existing in asylums of becoming an indifferent spectator of restraints too long continued, when, in this same asylum of Rouen, where every kind sentiment is expressed, and only entire non-restraint condemned, I saw a man in another cell lying in a straw crib, having a strait-waistcoat on, so as to secure his arms and body, and his feet bound to the crib, who had lain so dressed, so secured and bound, *nine years.* He doubtless, lies there still; he will lie there until death unbinds him. I had read of such things, and I had seen in our own country gross cases of prolonged and cruel restraint; but I felt humiliated and useless as I turned away and left this man, an old mariner, moving his head and body for ever a little to one side, and a little to the other; and uttering a few incoherent words, but distinctly, so as to leave no hope of his being quite unconscious of his perpetual bondage.

I acquit the director and physician of the Rouen asylum of all intentional or conscious cruelty in their management of this case. They are firmly convinced that such treatment is absolutely indispensable. The director spoke most kindly of and to the poor man. So have I formerly witnessed humane English physicians, full of the same convictions, daily contemplating helpless insane patients bound hand and foot, and neck, and waist, in illness, in pain, and in the agonies of death, equally without one single touch of compunction, or the slightest approach to a feeling of acting either cruelly or unwisely. They thought it impossible to manage insane people in any other way.

This very case is quoted in a review of the Hanwell Reports, by M. Brierre de Boismont, in no unfriendly spirit, to prove that our system at Hanwell is one of philanthropic impracticability. The man is described as being disposed to suicide: he would beat his head against the wall; he would roll about the floor; he would tear his clothes. These are excuses for restraint which, without one exception, experience at Hanwell has taught us to be trifling. A padded room; a dress of materials not easily torn; frequent refreshment in the open air; exercise; kind words and good food, will not only prevent immediate danger in such cases, but eventually remove the cause of danger. Restraint is but half a remedy. Granting that it excludes immediate danger of suicide (which it does *not*,) it does nothing for its cure; nothing to alter the suicidal condition of the mind. It must therefore be prolonged as long as the patient lives.

Various other cases are quoted by recent French critics, in no illiberal spirit, and without any attempt at severe criticism, to show the folly or risk of abolishing restraints. In one case, the physician resolved, however, to try. A suicidal gentleman was left in bed, unbound, but watched by two attendants, who had nothing to do but to watch him. In their watchful presence, it seems, he tore his shirt and strangled himself, without their perceiving it until he was dead. The physician looked in at the door of the patient's room, to make inquiries; and the attendants reported all quiet and comfortable: "he slept well;" and it was at length found that he slept the sleep of death. But surely the attendants in this case must have been scarcely more awake. They were men accustomed, perhaps, to rely on restraints; and unaccustomed to watch. Attendants of this kind in London have been known to tie up patients in their own dwelling-houses, in private families, when the physician has gone away; and then to go to supper, or spend the tedious hours of the night at cards. The patient becomes exasperated, and the cords are tightened. He continues restless, but he cannot get up. In speaking of such things even from an actual knowledge of the facts, I feel that I shall be suspected of exaggeration: I am now simply transcribing from the history of the case of a gentleman who afterwards recovered in a public asylum, to which he came lamed with restraint, and in a state of great irritation. With such attendants, to dispense with restraints is impossible.

That it is in no other sense impracticable may I think be asserted without the charge of presumption, now that for more than five years no hand or foot has been bound in the Hanwell Asylum by night or by day; a period during which more than 900 admissions have taken place, including patients exhibiting all the varieties of insanity, and all degrees of violence, and all imaginable diversities of difficulty. It is our rule, however tightly tied up the patient is brought to us, to liberate him at once; and the experience of the period I have mentioned proves, beyond the possibility of doubt, that the rule is safe as well as humane. Determination in the director, and willing obedience in the attendants overcome every obstacle. In a former part of these observations I mentioned with satisfaction the fact that one of the medical officers had lately gone from Hanwell to take charge of the lunatics in Ceylon. Amidst difficulties inconceivable in Europe, this excellent physician (Dr. James George Davey,) has resolutely commenced acting on the principles which he has so long seen in salutary operation; and the results promise to be equally satisfactory. One of the first cases which attracted his attention was that of a male patient sitting on the ground in a sort of cell or sty, with one of his legs fastened into a hole in the stocks: he was uttering horrid execrations; excited, frantic in the highest degree. His eyes were glassy and white, his countenance depressed and sunken; and his bodily powers almost exhausted by unceasing efforts to get loose. Here was a seeming subject for years of thraldom. Dr. Davey immediately caused the door to be opened, went up to the poor maniac, and after a little time succeeded in gaining his attention. His unexpected kindness was so alleviating in its effects, that in a few minutes the patient, liberated from the stocks, was walking up and down the court with his kind liberator. Some refreshment was ordered for him, and Dr. Davey left him after a little time, to use his own expressions, "as quiet and peaceable as an infant." Such are the effects of courage and of kindness; and the time will soon, I trust, arrive when their operation will penetrate into all cells, wherever existing, in which the victims of years now lie in hopeless restraints, like the poor man at St. Yon.

### PRIVATE ASYLUMS OF PARIS.

Before leaving Paris I was obligingly allowed an opportunity of seeing three of the principal private establishments for insane persons; one of them being superintended by Drs. Falret and Voisin, one by Dr. Leuret, and one by Dr. Mitivié. The arrangements in these establishments, and the manner in which they are conducted, are conformable to the high character of these distinguished physicians. In each there are several buildings, facilitating the division of the male and female patients, with the necessary subdivisions of the tranquil, the noisy, &c.; and in each a chief or central house of residence for the medical superintendents, which is also a place of re-union in the evening, or at other times, for such patients as can appreciate or derive benefit from social advantages. Each of these establishments possesses grounds of considerable extent, agreeably laid out; and the appearance of the patients and their attendants, always one of the most satisfactory tests of the real management of an asylum, was in each such as to afford every assurance of their enjoying all the comforts compatible with their malady.

The large establishment of MM. Falret and Voisin, at Vanves, about three miles south-west of Paris, has numerous recommendations in its site, its extent, and its disposition. I may describe it in general terms as a park, containing eighty French acres, and comprising a great variety of ground and pleasing combinations of scenery; whilst on the borders of this park there are several houses, which constitute the residences of the patients; almost every house that overlooks the grounds forming a part of the asylum. Some of these houses are so detached as to enable the proprietors in certain cases to receive the families or relatives of the patients as temporary residents. The various buildings also enable them to offer distinct residences to some of their patients, who can enjoy all the comfort of living in a house which seems their own, and have yet the advantage of a salutary superintendence. I was conducted through all these buildings, and over the park, by M. Voisin, accompanied by M. Battelle and M. Mallon. We saw, I believe, nearly every patient, and had an opportunity of estimating the general advantages of the establishment by afterward meeting some of the patients at dinner, with the families of the two physicians, and M. Christophe, one of the chaplains of the Salpêtrière; and of passing the evening with them. M. Falret has visited England, and is well known to many English practitioners. He is a man of fine and commanding appearance, sedate in his general demeanour, but cheerful, and in conversation earnest and animated. His various published works are of the highest character. Not to mention others, of greater extent, the article *Maladies Mentales* in the 'Dictionnaire de Méd. Usuelle,' contains every good principle of moral treatment, expressed with a justness and force that show M. Falret to be a worthy follower of M. Esquirol, his preceptor. M. Voisin is contrasted with his colleague by an ardour and vivacity conspicuous in his writings and his discourse, and remarkable even in his own country; his feelings are acute, his perceptions rapid, and his expressions forcible and even enthusiastic. One might almost say that these two benevolent persons have been providentially united in their undertakings for benevolent purposes; and they have been thus associated, amicably and usefully, more than twenty years. M. Voisin is sensibly alive to the important functions of a physician who undertakes to cure or alleviate infirmities of the mind; he speaks on this subject with an energy and fluency by which the hearer is carried away; but at the same time with reason and good sense, happily in him combined with a zealous and rare humanity. It is, especially, impossible to listen unmoved to his eloquent appeals in favour of the idiotic class of patients, for whom he has done and could still do so much. His views receive, perhaps, a beneficial modification from the composed and reflecting habits of M. Falret; but in philanthropy both seem to be equal. The mere eulogy of good men is grateful in itself; but the permanent pleasure derived from intercourse with physicians of this character, devoted to the care and cure of the insane, arises from the conviction that under their auspices every measure will in time be fostered and established by which the miseries of insanity can be lessened.

In the course of our inspection of this asylum, we met some of the patients in the grounds; in the pleasant shade of shrubberies, or by the side of a clear and refreshing stream which runs through the estate, or on the various heights, which afford various views of it, and of the neighbourhood. We also passed through several rooms of some of the houses at the dinner hour, and found various parties of the patients sitting at that meal, with every comfort belonging to their station. We were shown a great number of apartments, sitting-rooms, and bed-rooms, all neat and well furnished, most of them inhabited by patients, several of whom, by their readiness to converse, reminded me of patients with whom I am more familiar at home. In a grove, in a beautiful part of the park, there is a small and elegant chapel; and in another part of the grounds there are farm-buildings. Gardens full of flowering shrubs, and refreshed by fountains, divide and screen some of the houses from the central park; and the objects seen from the windows are of a nature to please and soothe those whose sphere of active enjoyment is the most limited. Diversified means of mental recreation seem also to be provided, and occasional reunions in the larger drawing-rooms of the central house present objects of pleasant anticipation, and are productive of more than transient benefit.

But still, MM. Falret and Voisin will, I hope, forgive me if I add, that I deeply lamented to find the degrading evil of physical restraint still permitted, although only in a few instances, to spoil the beautiful design of their asylum. That such enlightened and benevolent physicians, living in a house more than usually full of resources against all the violences and caprices of madness, should still avail themselves of this, the lowest, the coarsest, and the worst, does but prove the force of habit in resisting the progress of improvement. The spectacle of patients bound up in compressing dresses, painful to the body, and painful to every mind, as long as any mind is left, appeared even unnatural in an establishment presenting, with this exception, a kind of model of an asylum for the higher classes of patients. M. Voisin himself seemed, I thought, quite in an unnatural position when he was unbinding, and untwisting, and refixing, and demonstrating the miserable complications of linen, leather, and iron, on a poor lunatic's body, with a view of controlling and healing the rude outbreaks of the feelings, or the wild delusions of a disordered and afflicted mind. I feel, however, a comfortable assurance that the excellent directors of the asylum at Vanves will soon have banished what now appears to be only an inexplicable anomaly in their great plan, and at variance with every other indication of their own feelings and convictions.

M. Leuret's asylum is situated in the south-western suburb of Paris, on the south bank of the Seine, the grounds being bordered on the west by the large space called the Champ de Mars. On the high bank of the river, opposite to it, are the houses and gardens of Chaillot and Passy, the most agreeable of the suburban villages of the French capital. The opinions with which M. Leuret's name is particularly associated in England, scarcely do justice to his humane and sensible character. For a time, at least, the idea of him was that of a physician who undertook to expel all delusions by the force, not of argument, but of a column of cold water directed to the outside of the victims's head. I believe he does not now very sedulously follow the rigid rules once seemingly advocated in his writings respecting the insane; but finds that their infirmities do really sometimes demand indulgence, and that some of their delusions actually resist the douche. It is difficult to account for the advocacy of so kind a physician, for such he really is, of a system characterized by no less an authority than that of M. Pariset, conjoined with M. Esquirol, in a Report presented to the Academy of Medicine, as one of intimidation, mixed with mockeries, reproaches, and physical pains, followed, indeed, by diligent and kind attentions, with the view of compelling patients to disavow or resign their morbid ideas. Like all other strange modes of practice, this was probably not destitute of some portion of rational foundation; but in its general character there was an evident and dangerous resemblance to cruelty; and its general success would have been truly unfortunate, tending, no doubt, to bring back the ancient method of beating lunatics into their senses, and flogging them into calmness, especially vaunted once in Scotland, and practised everywhere else.

On two occasions on which I visited M. Leuret's establishment, every opportunity being given to me of seeing all parts of it, I was gratified with the appearance of perfect order and comfort everywhere visible. It consists of an excellent house, which is separated from the street by a spacious, paved court-yard. Behind the house are several acres of garden and pleasure-ground, in which I was glad to see that M. Leuret had succeeded in persuading some of the patients under his care to occupy themselves; for the difficulty of doing this makes the general indolence and listlessness of private asylums very oppressive. On one side of the grounds there is a detached house for female patients, with provision for their proper classification; and on the other side of the grounds there is a house for male patients, with some rooms and a small inclosed airing-court, especially designed for the noisiest of the patients, or for those incapable of enjoying the pleasure of being more at large in the grounds or gardens. I understood that it was M. Leuret's custom every evening, or at least frequently, to invite a certain number of his patients to the central house; in the handsome apartments of which they assemble, music and other recreations being provided for them. The attention evidently paid to the state of the gardens, and to the walks for the patients, and the cheerful appearance of the buildings, and of the whole establishment, afforded strong evidence of the general efficiency of the superintendence of this asylum, and would exclude almost every unpleasant association from the mind of a visitor. I had, of course, no opportunity of becoming acquainted with the details of its management; but the appearance of all the patients whom I saw was highly satisfactory.

M. Mitivié's kind invitation afforded me a much-desired opportunity of seeing the private establishment at Ivry, which was that of M. Esquirol, and where, consequently, everything speaks of that illustrious physician. Ivry is a village a few miles east of Paris, south of the Seine; and M. Mitivié's asylum is in a retired but agreeable situation, not commanding extensive views, but wholly surrounded by rural objects. There is here, as in the other private asylums of Paris which I visited, a central or chief residence, with detached residences for the different sexes, and for patients variously affected. But at Ivry some parts of the establishment present M. Esquirol's favourite form of quadrangles, or rather of quadrilateral inclosures, the buildings of which, of one story only, are placed on three sides, the fourth side being bounded by a high iron palisade, through which the patients can see the lawn, the gardens, or the fields. The interior of these inclosures is sown with grass, and there is a broad covered walk on every side. It is scarcely necessary to add that all the arrangements of this asylum are carefully adapted to the class of patients received. The whole establishment has an air of calmness and repose likely to be grateful and beneficial to the patients sent thither, as to a retreat from the ever-agitated capital to which it is so near. M. Mitivié is a man of quiet and somewhat reserved manners, but extremely well-informed, judicious, and candid. He is the nephew of Esquirol, and it was a singular pleasure to me to hear from him some traits of the character and habits of his illustrious uncle, with whose writings I have for many years kept up an almost daily acquaintance. All that I heard answered to my previous conceptions of the simple philanthropy, sagacity, and industry of that great follower of Pinel. His published works exhibit, I believe, but a small part of the labours of more than thirty years concentrated almost upon one great object; and to which the large collection of crania and casts at Ivry, as well as numerous drawings illustrative of the characters of insanity, and a vast collection of plans of asylums attest the constant activity of his attention. I had passed a whole morning in seeking, in all the print-shops of the Quai Voltaire, a good print of Esquirol, before I found that the only good one, from a painting by Pichon, was the private property of M. Mitivié; and I consider myself much enriched by being by his kindness made the possessor of a copy, the interest of this present being increased, if possible, by my receiving it in the house in Paris which was the residence of Esquirol, and is now inhabited by M. Mitivié; and in the library where Esquirol wrote, and by the chair in which he usually sat, and in which he was painted. In this portrait, Esquirol is represented as sitting by the bust of Pinel; and both the bust and portrait are in M. Mitivié's house. The medical men of other countries have sometimes reproached the French physicians with a contented ignorance of the writings of all medical authors out of their own country; but in M. Esquirol's well-arranged library, and which still seems as if it were his, I was gratified to see nearly every English work of standard reputation, not only on insanity, but on all other branches of medical science. The collection of works on insanity appeared to be most complete. The house is in a quiet street in that silent quarter of Paris near the Garden of Plants, where so many scholars, naturalists, men of science, artists, and other studious persons most congregate; in which part of Paris Cuvier passed so many years devoted to immortal labours, and where so many great men have spent their lives in retired devotion to the highest pursuits that can engage the human mind. The windows of what was the study of Esquirol open on a small and pleasant garden; and in this room, after the numerous and active duties of the day, he used to occupy himself in writing at night; a circumstance to which M. Mitivié ascribes some alleged defects in his style, of which a foreigner is, I think, scarcely conscious; the descriptions in his pages being generally not only so characterized by his penetration and wisdom, but written so clearly and with so much spirit, that there are no medical works which the reader peruses with less fatigue. In his eloquent commentaries, the diligent student finds at each reperusal fresh proofs of his admirable powers of observation, and of his sedate and excellent judgment; and those who are most constantly with the insane, and most occupied in devising means of promoting their comfort and cure, can best appreciate the innumerable proofs his works afford of an active mind, animated in the pursuit of knowledge of the wants of the insane by a benevolent heart. His publications, his journeys of inspection, his unwearied literary efforts, carried the first reforms into all the provincial asylums of France. His lectures and his writings next diffused sound principles throughout Europe and throughout the world; his pupils were selected to superintend the asylums of the countries from which they had resorted to Paris to learn under so great a master;* and his views still evidently animate those of his countrymen who now enjoy opportunities of acting upon them. He appears, like his great predecessor, to have been often harassed with opposition, and to have had the mortification to see his opinions for a time disregarded or overruled; but for both, death, the great benefactor and ultimate repairer of human wrong, has finally "extinguished envy, and opened the gate to good fame;" and I believe all the living physicians of Europe, who hope to be remembered among those who have benefited the insane, gratefully acknowledge that their best efforts have been stimulated, if not altogether suggested, by the examples of Esquirol and of Pinel.

There are other private asylums in Paris which I should have been glad to visit; but my time was too limited to permit me to do so, or even to pay my respects to many of the Parisian physicians whose names adorn our profession.

Upon the whole, I prefer the aspect of the French private asylums to those of England, with a few distinguished exceptions. I think the arrangements made for the reception and treatment of private patients are more systematic and better than in our ordinary private asylums. Those, however, which I have described, are to be considered among the best. I believe it would much conduce to the comfort of patients of the richer classes if all private asylums were so regulated or so enlarged as to give them a more special adaptation to their object, and the advantages which are now only to be found in public asylums where either the patients are received gratuitously or for very moderate payments. The attractive idea of giving an entirely domestic character to a private asylum is either delusive, or only compatible with a plan which excludes all troublesome patients. Without this exclusion, the proprietors of the asylums and their families, and all their most reasonable patients must be subjected to constant annoyances, by which no one is benefited; for it is the loss of the power of conforming to ordinary customs and of enjoying or contributing to social comfort, that is the actual cause of the patients being sent to the asylum from their families. Very few of them become fit for continual and intimate association until they are decidedly convalescent. Those who have not been marked by any natural feebleness of mind may gradually be restored to these social capacities; and perfect restoration to them constitutes their cure: but to endeavour to force such restoration is useless. The chief error of many of our English private asylums, partly arising from defective views in this particular, is that their general construction is unsuited to the purposes to which they are applied. There may be half a dozen exceptions to this remark; where the proprietors of such houses are wealthy. More commonly we find large dilapidated mansions converted into asylums; badly situated and much out of repair. An inadequate establishment is meagerly stretched out to fit the great mansion, and the exterior signs of decay prepare the visitor for the discomfort and gloom within, which is too well calculated to take all heart out of the arriving patient. Cold rooms, tawdry furniture, dirty passages, and various other peculiarities seem, even during a temporary visit, to shut out the hopeful world, and give prevalence to dismal thoughts alone. All these incongruities arise from the attempt to do what cannot be done, and to avoid what would alone be advantageous, assimilating the house to a public asylum. As it is, the patients consider themselves mocked by the semblance of a private house, and lose the advantage which arises from a conviction that they really are not considered to be of perfectly sound mind.

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* Discours prononcé sur la Tombe de M. Esquirol, le 14 Decembre, 1840, par M. Falret, son ancien élève; Paris, 1841.

This error is, however, venial; and seems to have sprung from a laudable wish to deprive a private asylum of every repulsive feature.

Far worse evils exist in private asylums, for which at present there appears to be no remedy. I am convinced, from information which reaches me through many channels in the course of my public duty at Hanwell, that there is no gross neglect, no wanton cruelty, which is not still practised in some of these institutions. Every kind of vexatious severity, every exasperating meanness, may be employed to torment the inmates of a private asylum; their food may be bad; their attendants brutal; they may be doomed to the dullest monotony, stinted in fire and candle, and mental occupation or relaxation, or proper bodily exercise, exposed to insufferable insolence from servants, or even neglected as to cleanliness; and yet the low cunning of those who trade in insanity may continue to make a decent appearance before the Commissioners. From what I have myself seen I presume there is no degree of coarseness, ignorance, or vulgarity which is understood to disqualify any man or any woman for obtaining a license to take care of insane persons. And over those who have a license, the Commissioners can exercise but small control. They cannot know much of the diet or the general treatment in such houses; they have no means of finding out whether in any given case an attendant has been chosen for any better quality than that of being content with low wages. Even the returns of the deaths of patients seems to be very carelessly made to them; and deaths sometimes occur in suspicious circumstances which the Commissioners should have an immediate opportunity of investigating. In public asylums these matters are better looked after; but it would be well, even in those institutions, if the minutes of the governing bodies, the list of casualties, and the various report books were submitted to official inspection. Irresponsibility is a dangerous element in the government of asylums for lunatics; and my opinion, formed and expressed long ago, has been confirmed by the subsequent experience of many years, that every insane person should in some way or other become the public care, and be looked after by responsible officers of the state, so as to ensure the hope of recovery and liberty to every curable case, and proper protection to all.

In thus giving you an account of my recent visits to some of the French asylums, I have naturally been led to comment on several matters with relation to those of our own country; and although I acknowledge the imperfection of what I have merely offered to you as sketches, I believe that some of the subjects on which I have made these desultory observations are really at this time deserving of the attention of the governing bodies and officers of asylums, and of all who take an interest in a class of persons labouring under one of the severest of human afflictions.

I remain, my dear Sir, always, with much regard,

Very faithfully yours,

JOHN CONOLLY.

LAWN HOUSE, HANWELL; *Dec.* 1844.

## INTELLIGENCE.

### SCHOOLS FOR THE SONS OF MEDICAL MEN.

WE are happy to say that MR. MARTIN's admirable scheme for ensuring to the sons and near relatives of medical men the advantages of a first-rate education, at a comparatively small cost, goes on prosperously, notwithstanding the pre-occupation of the professional mind, at this time, by the many absorbing topics relating to medical polity. The particulars of this scheme are well known to all our readers. We will only state, in explanation of the terms employed in the following List of Contributions to the Schools, that the SHARES are of the amount of £25 each; that SHAREHOLDERS and DONORS have nearly equal privileges, only that the latter incur none of the pecuniary liabilities attaching to the holders of shares in joint-stock companies; and that Benefactors neither obtain privileges (except the privilege of doing good) nor incur responsibilities.

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| Edward Daniell | Newport Pagnel | 1 |
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| Francis William Pittock | Sellinge, Ashford | 1 |
| John Ch. W. Lever, M.D. | Wellington street, Southwark | 1 |
| George Rogers | Bristol | 2 |
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| Donors. | | *Amount of Donations.* |
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| Archibald Robertson, M.D. | Northampton | £100 |
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| Sir Benjamin Brodie, Bart. | London | 100 |
| John Forbes, M.D. | London | 100 |
| Alfred Hardwick, M.D. | Kensington | 20 |
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| Peter John Martin | Pulborough | 25 |
| William James West | Tunbridge | 20 |
| Edward Westall | Croydon | 100 |
| Sir Charles Mansfield Clarke, Bart. | London | 100 |
| Thomas Smith | Crawley | 25 |
| Edward Scholfield, M.D. | Doncaster | 20 |
| Henry Jephson, M.D. | Leamington | 105 |

| Benefactors. | | *Amount of Benefactions.* |
|---|---|---|
| The Misses Wallace | Carshalton | £25 |
| Edward Wallace | Carshalton | 20 |
| William Newnham | Farnham | 25 |
| The Venerable Archdeacon Pott | Exeter | 10 |

## THE NATIONAL ASSOCIATION OF GENERAL PRACTITIONERS IN MEDICINE, SURGERY, AND MIDWIFERY.

In the article in our last Number, in which we examined, at such length, the new Medical Bill in all its bearings, we stated, after much consideration, "that we had come to the conclusion that it would be for the benefit of the profession generally, that, in addition to the existing medical corporations, a third should be established for the class of general practitioners." The consideration of the same facts, and the same process of reasoning, that led us to this conclusion, seem to have impressed the minds of the great body of general practitioners in the same manner; and the result has been the formation of an Association to carry into effect this important object. The association has been carefully organized, and its operations have been throughout conducted in that spirit of mingled caution and activity, which are at once indicative of sound sense in the present, and prophetic of sure success in the future. The Association has already enrolled about 4000 members, and is proceeding to increase its numbers at the rate of 30 to 40 daily. Indeed, it may be said that the whole of the general practitioners have taken up the question, and it can no longer be doubtful that the object they have in view must be attained, provided they continue to act with the energy and discretion they have hitherto displayed.

The following extract from the Report of the Provisional Committee of the Association, presented to the general meeting held on the 14th March, contains an exposition of the present views of the members as to the nature of the institution they are seeking to establish, as well as a summary of the principal changes which appear to them requisite in the new Medical Bill; it also exemplifies the prudent and conciliatory spirit in the management, which we have been commending.

"Since the promulgation of the heads of Charter, the committee have had a very extensive correspondence on the subject. The result is, that they are prepared to recommend some modification in the original suggestions. Every advice from the country has been in favour of voting papers, either available personally or by proxy, and the committee most cordially agree in recommending the meeting to adopt that plan. Every advice from the country has been in favour of a ten years' instead of a five years' franchise. The committee are at the same time aware, that there is a numerous class in the metropolis who desire that every qualified man should have a vote. Having well considered all the bearings of this question, they are disposed to recommend the five years' franchise as originally suggested by themselves. The proposals for a Charter by the committee, at Manchester, embrace many details with which your provisional committee consider it would be inconvenient to encumber the first suggestions, and in particular, having in view a distinction between those practitioners who combine the character of tradesmen with their professional calling, the Manchester committee propose a distinction of Fellows and Members in the New College: most cordially concurring in the object, your provisional committee would enquire whether the best mode of attaining that, and many other most desirable objects, will not be through the medium of a well considered, and duly sanctioned code of bye-laws?

There are some minor changes made in the "Heads of Charter," and the committee submit the following as the form of incorporation which would be best received, and most calculated to promote the welfare of general practitioners, and the public good,

'*College of General Practitioners in Medicine, Surgery, and Midwifery;' under an appropriate Title, with a Common Seal, and power to sue and be sued, and to hold Lands and Tenements not exceeding* £5000 *per annum.*

MEMBERS TO BE INCORPORATED.

*In the first instance.* 1. Every gentleman who was in actual practice previous to the 1st of August, in the year 1845. 2. Every Licentiate of the Apothecaries' Company. 3. Every Member of the Royal Colleges of Surgeons in England, Ireland, or Scotland:—Every Doctor or Bachelor in Medicine, of any University of the United Kingdom. 4. Every Fellow or Licentiate of any College of Physicians of the United Kingdom who shall have been respectively in actual practice as a General Practitioner in England or Wales at the period of the granting of the Charter, and who shall be enrolled a Member within twelve months from the date of the Charter.

*Subsequently.* Such persons only as shall have been duly examined and certified and shall have brought themselves within the scope of the Charter and the Bye-laws.

GOVERNING BODY.

*One President,* to be elected by the Council triennially and to be eligible for re-election.

*Three Vice-Presidents,* to be elected by the Council from their own body by ballot, one to go out every year, and not to be eligible for re-election for a year.

*A Council,* to be composed of Forty-eight or Sixty Members, one half Practitioners resident within ten miles of the Royal Exchange, the other half Country Practitioners resident beyond that distance. No Member to be eligible as a Member of Council under Fifteen Years standing as a General Practitioner.

The first President, Vice-Presidents, and Council to be nominated in the Charter, and to hold their offices for three years.

All future Members of Council to be elected by Members of the College whose Diploma or License shall bear date not less than Five Years previous to the day of Election.

After the expiration of the first Three Years, one third of each branch of the Council to go out of office annually, and the vacancies to be filled up in equal proportions from the same branches, but the retiring Members not to be eligible for re-election for a year.

The Election to be by voting papers and decided by a majority of votes.

The Council to have the power of directing the Course of Study for the future Members of the College.

The Council to have the power of framing Bye-laws, Rules, and Ordinances, with power of administering oaths for the regulation of the affairs of the College, subject to the revision of the Law Officers of the Crown.

The Council to have the power of appointing and dismissing all Stipendiary Officers.

The Fees to be payable upon the Examination of Candidates as well as the Annual Contributions of Members, to be defined in the Charter.

### COURT OF EXAMINERS.

The Council to elect annually a Court of Eighteen Examiners.

No Member of Council to be eligible for that Court.

No Member of the College to be eligible as an Examiner under Ten Years' standing from the date of his Diploma or License.

The President or one of the Vice-Presidents to preside at every Meeting of the Court of Examiners, but not to have any Vote.

Diplomas to practise as General Practitioners to be granted under the College Seal.

The chief modifications which the Bill would require to give effect to this Charter are:

I. The total repeal of the Apothecaries' Act, as originally intended by the Minister.

II. To give the Council of the new College, by law, Representatives in the Council of Health—as the Minister promised for his own part in his speech on the introduction of the Bill.

III. To register under the Bill the Members of the new College of General Practitioners in the place of Licentiates in Medicine and Surgery.

The further changes in the principles of the bill which your provisional committee deem necessary to secure the welfare and true respectability of the class of general practitioners, and, indeed, of the whole profession, are—

I. A more efficient penal clause against unlicensed practitioners.

II. A withdrawal from the Council of Health of the power of designating what class in the profession shall be eligible to public offices, leaving the power in the hands of the public as heretofore of choosing their medical attendants, whether for public or private practice, from any class of qualified medical practitioners.—

With some important changes in the construction of certain clauses of the bill, easily introduced in committee, as—

I. That no person be admitted to examination under 22 years of age.

II. That no person be admitted to examination without testimonials of having devoted at least five years to medical study.

III. That testimonials of a similar period of study be required from the class of inceptor candidates.

IV. That the special examination in midwifery be open to none but registered practitioners of one class or other.

In fact every modification of the Bill should have a direct tendency to elevate the character, and increase the usefulness of all classes of medical practitioners alike.

The Committee request the meeting most particularly to observe, that the Heads of Charter are brought before them strictly as "*suggestions*," and as such they are herein recorded; so that, should it be thought proper to adopt this Report, the association will not be precluded from discussing and amending the principles and the details embraced.

No efforts have been spared, in the endeavour to reconcile conflicting opinions, and to frame such an outline as will give general satisfaction. Many individuals who have agreed to these suggestions, have more or less modified their original views, for the purpose of promoting unanimity; and without the slightest desire to interfere with perfect freedom of discussion the Committee beg most urgently to impress upon their audience, that dissension will be fatal to the attainment of our just rights, while unanimity of opinion, and cordial co-operation, with a definite object, having for its basis the public good, will most certainly, sooner or later, be crowned with success."

While approving generally of the above sketch of the projected Charter, there are several things in it which we think might be modified with advantage; and there is one point of vital importance, respecting which we differ entirely with the Association. Our nearly exhausted limits will permit us merely to refer to the subject at present; but we earnestly call the attention of the Committee to it, as a matter of the greatest importance to the whole medical profession: we refer to the EXAMINATION BOARD, or COURT OF EXAMINERS.

We remain of the opinion, so strongly expressed in our last Number, that there should be only ONE Examination Board for testing qualifications for practice, and that every one entering the profession, to whatever class he might belong, should be obliged to pass through it; the COLLEGES being left to establish whatever examinations they chose for the *admission of their own members.* We think that the institution of a distinct Examination Board for general practitioners would tend not only to separate them still farther from their brethren of the other classes of the profession, but would have the effect of lowering, instead of elevating them as one of the constituent bodies of the profession. We admit that they are fully justified in objecting to the examination Board proposed in the Bill; but we think they should exert their influence, rather to obtain one general Board for all classes, than a special Board for their own. We sincerely desire to see the new College established; but we wish its establishment to be a new bond of union to the profession, not a means of further disunion. We wish it to have all the rights and privileges of an independent College; but we wish it to have no more. Our desire is to see the exorbitant claims and pretensions of the existing Colleges reduced within legitimate limits, not to see the new College claiming a participation in powers which are inconsistent with the general good of the profession.

As the readiest mode of stating our general views respecting the organization of the profession, we reprint the following paragraph from our last Number; and we venture to assert that the plan sketched by us, of which this is an outline, contains the elements of a system of organization, calculated to produce greater unity and harmony, and more general good to the profession than can result under the Medical Bill, even when modified according to the provisions of the proposed Charter.

"I. A general Governing Board (The Council of Health and Medical Education), having the exclusive regulation of the education, mode of examination, registration, and licensing of medical practitioners of every class.

"II. An Examination Board, appointed by the Council of Health and unconnected with the Colleges, for testing the qualifications of candidates for the license to practise. No one to be permitted to enter the profession without being examined by this Board, and obtaining from it Letters testimonial to the Council of Health, authorizing the granting of the License to practise as a Licentiate of Medicine and Surgery; and no one, not possessing this License, to have any legal right to practise in any department of the profession.

"III. A College of Medicine and Surgery for the [voluntary] incorporation of Licentiates of Medicine and Surgery, to be instituted by Royal charter under the name of 'The Royal College of Medicine and Surgery,' with power to frame laws for the admission of its members (Members and Fellows), for the government of its affairs, electing officers, &c. &c.

"IV. A College of Surgery (The Royal College of Surgeons of England), with power to frame laws for the admission of its members (Members and Fellows), &c. &c.

"V. A College of Medicine (The Royal College of Physicians of England), with power to frame laws for the admission of its members (Associates and Fellows), &c. &c."

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2. Modern Cookery in all its branches. By Eliza Acton, 1845. 8vo, pp. 684.

3. The General Nature and Treatment of Tumours. By S. Macilwain, Surgeon. — London, 1845. 8vo, pp. 220. 5s.

4. Address at the Anniversary Meeting of the Entomological Society. By George Newport, President.—London, 1845. 8vo.

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6. Practical Observations and Suggestions in Medicine. By Marshall Hall, M.D. F.R.S. &c.—London, 1845. 8vo, pp. 360. 8s. 6d.

7. The Enquirer, devoted to free discussion as to the proper use of Alcoholic Poisons.—Albany, 1842-3. 4to.

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24. The Medical Student; or Aids to the Study of Medicine. By R. Dunglison, M.D. &c. — Philadelphia, 1844. 8vo, pp. 312.

25. Second Report of the Sanitary Commission. —London, 1845. Folio.

26. Causes générales des Maladies Chroniques, specialement de la Phthisie Pulmonaire. Par A. Foureault, M.D.—Paris, 1844. 8vo, pp. 480.

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